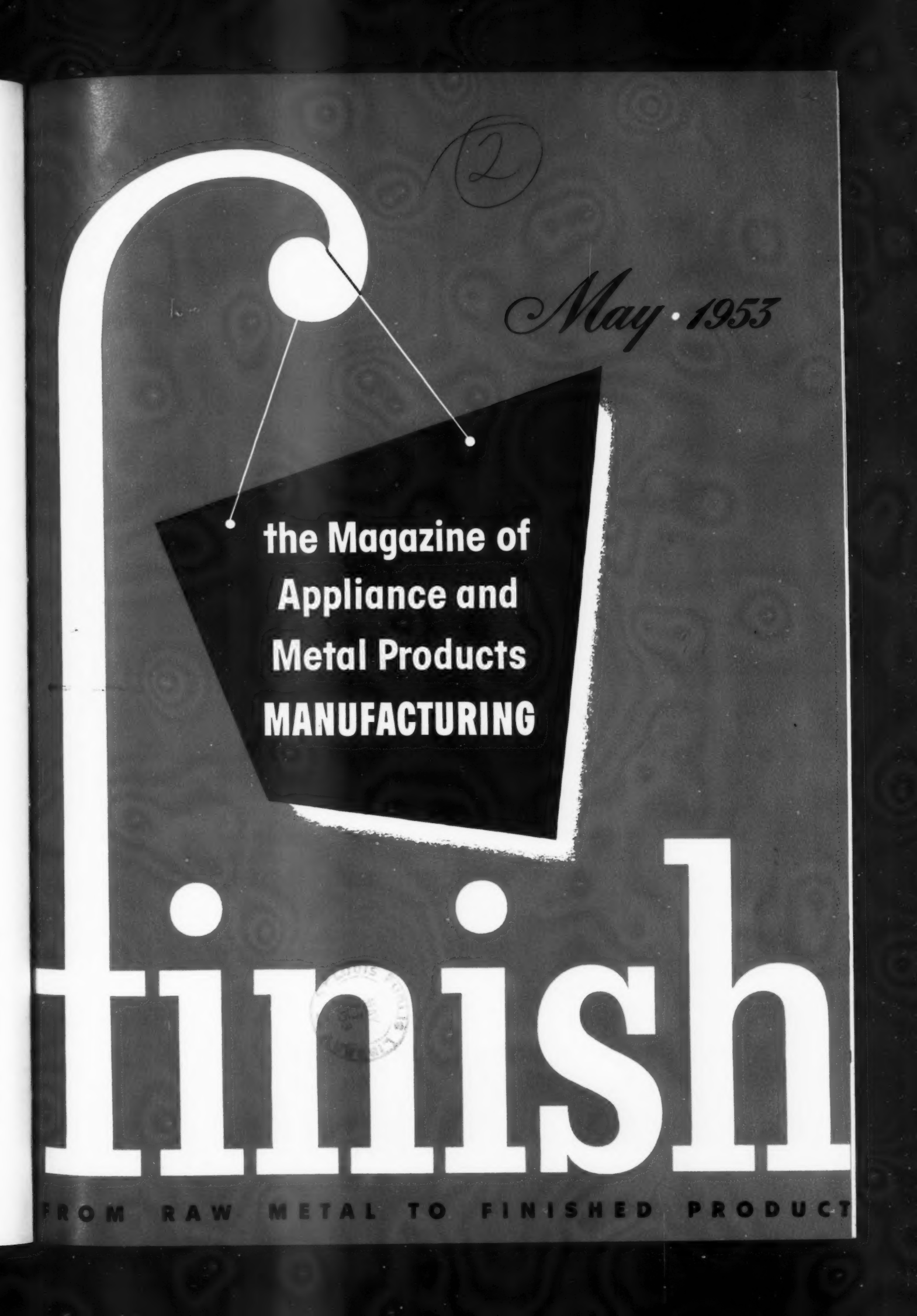
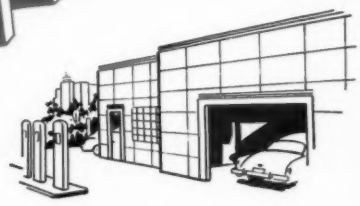

May · 1953
the Magazine of
Appliance and
Metal Products
MANUFACTURING
finish
FROM RAW METAL TO FINISHED PRODUCT

KEEP YOUR COLORS UNIFORM WITH "Ceramic" OXIDES



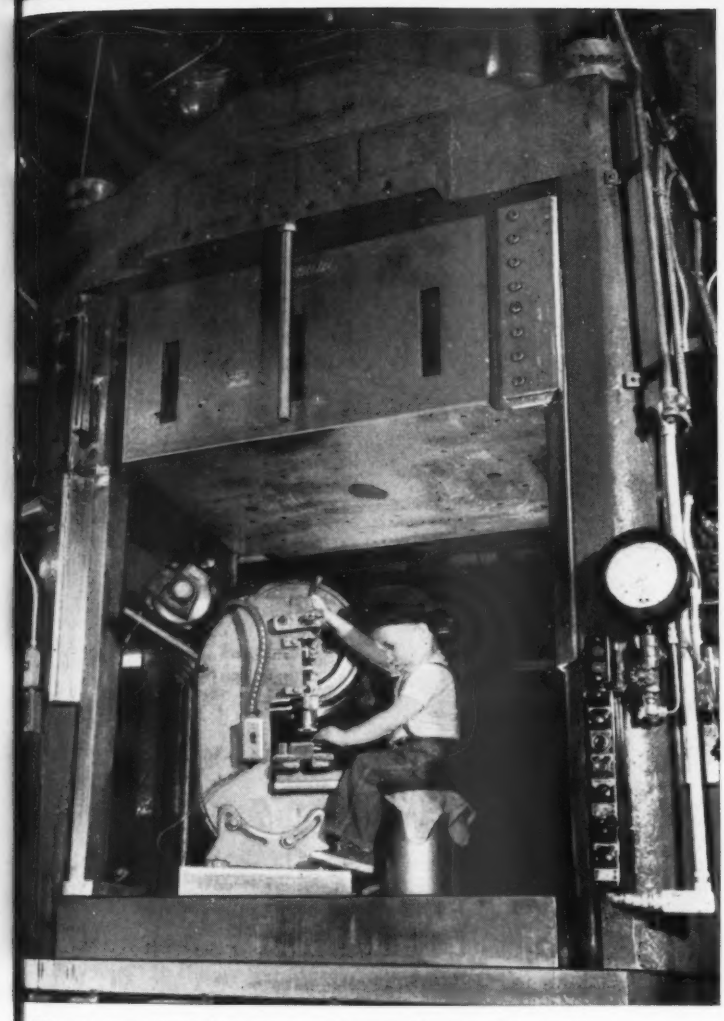
Architectural sheets, whether for domestic, industrial, or display use, and whether for inside or outside application, pose a problem of precise color control. Any smallest variation means rejection and loss to the producer.

"Ceramic" has been known for years in the ceramic industry for the dependability of "Ceramic" colors, in quality, workability, uniformity, and exact duplication from order to order, from year to year. Your specifications are in the hands of experts, from the time your order is received until the shipment is on the way. Order from "Ceramic" and be safe.

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.

Complete STAMPING FACILITIES

ADS OUT



This contrast in Danielson press equipment shows a 5-ton press in the jaws of a 300-ton hydraulic, which can draw up to 13" depth and 23" diameter.

FOR APPLIANCE AND METAL PRODUCTS MANUFACTURERS

Danielson is equipped for complete manufacturing . . . from precision tooling to the finished product. We specialize in deep draw parts — in brass, steel, aluminum and stainless steel.

Our complete facilities include: Tool and Die Department — Press Department — Shearing — Circle Shear — Spot Welding — Arc Welding — Silver Soldering — Hydrogen Brazing — Polishing — Degreasing — Painting — Assembling.

We can furnish all or any part of this complete service, as it suits your needs. We like the difficult jobs, so bring your next tough problem to Danielson.

A LEADING SUPPLIER OF COMPONENT PARTS FOR WASHING MACHINES AND OTHER APPLIANCES

METAL STAMPINGS

Specializing in

DEEP DRAW WORK

PRECISION DIES

JIGS—FIXTURES

V. W. DANIELSON MFG. CO.

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PLATING SOLUTIONS · NICKEL DIP SOLUTIONS · NEUTRALIZER SOLUTIONS

ANY QUANTITY

INDUSTRIAL Filters

BONUS PERFORMANCE
with lasting reliability

The engineering and construction features of INDUSTRIAL filters add up to maximum clear filtrate with less floor space, greater operating conveniences, and less maintenance delays and expense. The general design permits the use of the materials best suited to the solution requirements. Vertical filter leaves with ample flow space on both sides offer maximum filtration area. Outside lockup simplifies the installation of filter leaf and bag assemblies. An exclusive air-wash cleaning method practically eliminates the usual labor and inconvenience of dismantling the filter after every cycle. INDUSTRIAL filters are often in operation for months without removing the cover — cutting downtime to a minimum. All these features have been proved in long-life service — your assurance of dependable bonus performance.

Full particulars and recommendations on any filtration job will be given upon request.

4581

INDUSTRIAL
FILTER & PUMP MFG. CO.
5906 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
CORROSION TEST CABINETS
HEAT EXCHANGERS

MEETINGS

LPGA CONVENTION

Liquefied Petroleum Gas Association, annual convention and trade show, Chicago, May 3-6.

ENAMELER CLUBS

Eastern Enamelers Club, spring luncheon meeting, Sylvania Hotel, Philadelphia, May 9.

Midwest Enamelers Club, annual Maypole Party, Sportsman Park Golf Club, Chicago, Friday, May 22.

MATERIALS HANDLING SHOW

National Materials Handling Exposition and concurrent Materials Handling Conference, Convention Hall, Philadelphia, May 18-22.

GAMA ANNUAL MEETING

Gas Appliance Manufacturers Association, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., May 20-22.

COOKING, HEATING MFRS. MEETING

Institute of Cooking and Heating Appliance Manufacturers, annual meeting and suppliers exhibit, Netherland Plaza Hotel, Cincinnati, June 1-3.

ELECTROPLATERS MEETING

American Electroplaters Society, 40th annual convention, Benjamin Franklin Hotel, Philadelphia, June 15-18.

SUMMER HOMEFURNISHINGS MARKET

International Homefurnishings Market, The Merchandise Mart and American Furniture Mart, Chicago, June 22-July 2.

ASTM ANNUAL MEETING

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 29-July 3.

ADS OUT

finish SUGGESTION BOX

Hotpoint range plant uses "iron hands" to unload oven liners from presses

AT THE range plant of the Hotpoint Company, in Chicago, the fabrication department is now using "iron hands" to unload oven liners from presses following stamping operations.

A typical operation is shown in the photo below. First, the press operator manually loads cold rolled deep drawing (.037") steel sheets, 64 inches wide by 19 inches long. On the press upstroke, the iron hand unloads the drawn sheet, turns it over so that it is right side up for the next operation, and drops it onto a gravity roll-conveyor which carries the liner stamping to the next fabrication operation.

On the press upstroke the "iron hand" unloads the drawn sheets, and drops it onto gravity conveyor which carries it to next operation.

Close-up view of operation.

Prior to installation, the operator removed the stamping, turned it over, carried it 15 feet, and loaded it into a second press for further stamping operations.

The close-up view (above) shows the jaw of an iron hand which is one of several kinds that can be applied to suit various types of dies, workpieces or lifting conditions.

Shown in the photo is one of the so-called "chisel" type hands — the lower jaw being a chisel-edged blade which digs under the stamping and lifts it off the die. Safety bolts projecting upward from the front edge of the bed prevent the stamping from being pushed out at the front of the press. The upper jaw member is provided with two cone-pointed grippers.

The iron hand is a self-contained "robot" arm, mounted on the press frame, using compressed air as an actuating medium, and is electrically controlled.

Hotpoint reports that production of oven liners and safety conditions have been greatly increased since the "hands" were installed.

Source for further information on "iron hands" may be obtained by writing directly to *finish*.

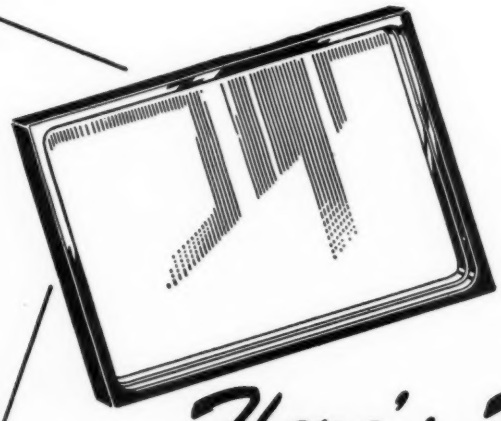
An Important Sales Feature...

for **RANGE MANUFACTURERS**

PERMA-VIEW

A growing list of manufacturers are finding that the Perma-View Oven Door Window is an important sales feature for their ranges.

More top line range manufacturers in the United States and Canada are using the Perma-View "visible baking" sales feature in 1953 than in any preceding year.



Here's Why

Perma-View lends salable beauty to your product. All that meets the eye is crystal clear tempered glass and gleaming chrome trim—no unsightly sealing strips are visible —yet—Perma-View is perfectly sealed so that the crystal clear visibility is retained—*Year after Year.*

Perma-View comes to you ready to assemble into *your* oven door—"Out of our carton into your oven door"—lending time-saving and space-saving economy on your assembly line.

Perma-View is made in sizes to suit your door—aesthetically correct—Perma-View engineers will gladly assist you in selecting the proper window for your oven door. Just write or phone —Perma-View will be on the job immediately with the kind of product and service you have hoped for.

MILLS PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

THE finish spotlight

New addition to Frigidaire's expanded electric range line is this completely deluxe 30-inch range. A new high back panel with full-width fluorescent cooking top lamp and built-in automatic oven control are outstanding features. The oven will hold up to six pies or 10 loaves of bread, and is ideal for preparing big meals as shown here. There are four surface cooking units on the divided top, and a full-width storage drawer on the bottom.

can porcelain enamel help you sell more WATER HEATERS?

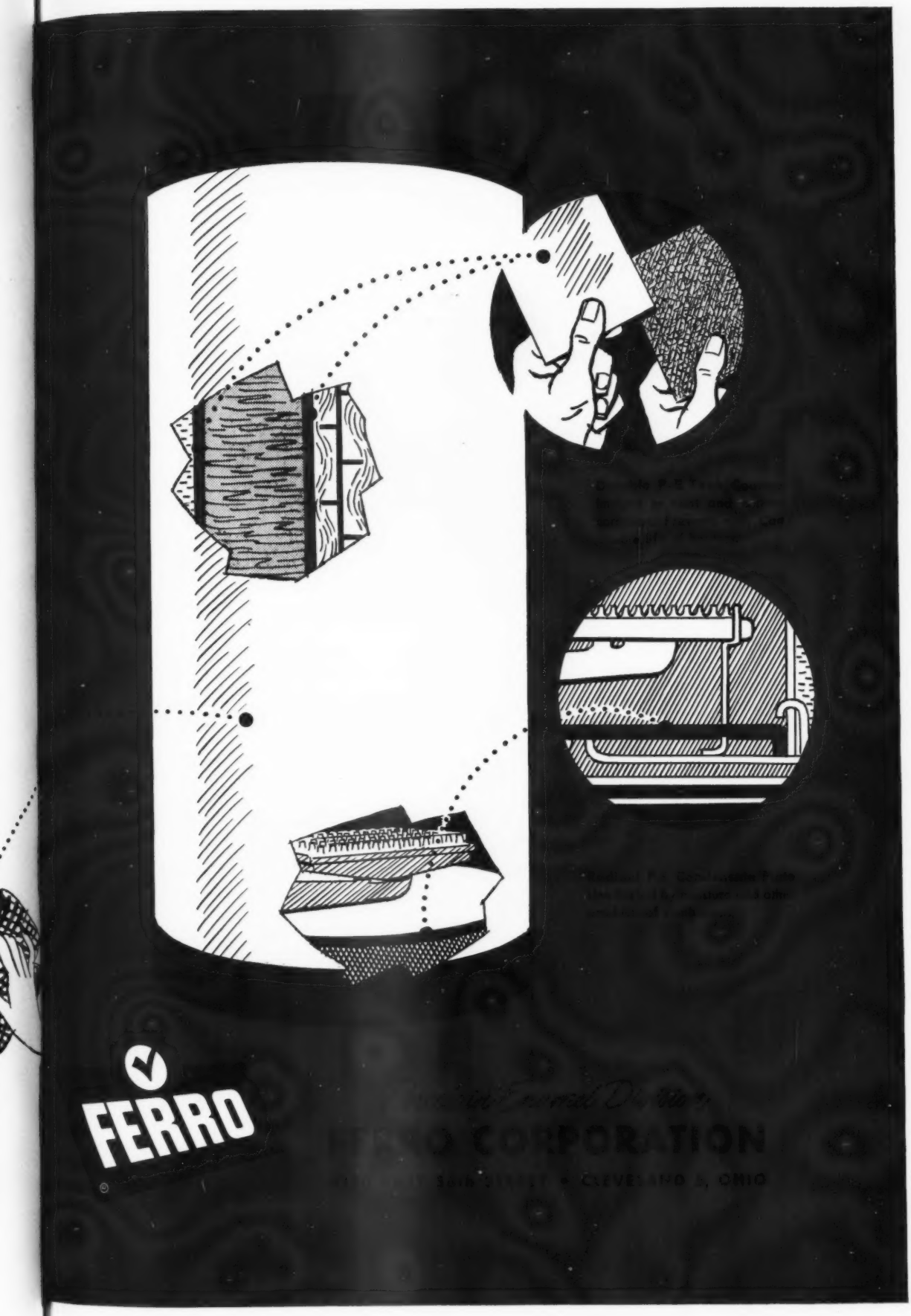
In these days of soft markets and intensive competition for the consumer's dollar, appliance makers are turning to porcelain enamel for both old and new uses. And well they might, for here is a *proven selling feature* that costs them relatively nothing.

Mrs. Homemaker (and her husband, too) know porcelain enamel for what it is . . . a *lifetime* finish. They know it to be enduringly beautiful; alkali, heat and corrosion resistant; completely sanitary; easy to clean . . . in short, the *quality* finish.

What they don't know is that, while other production costs have climbed steadily, porcelain enamel today costs little, if any more than it did twelve years ago. And you can use lighter-gauge, lower-cost steels because today's porcelain enamel coatings are thinner, lighter in weight, fired at lower temperatures. What's more, they're tougher, too . . . and *how you can demonstrate this on the selling floor!*

Yes, you are going to see porcelain enamel on more and more appliances . . . used in more and more ways by the industry. Perhaps *you* will be one of these industry leaders. If you have thoughts along this line, we should be able to help you. Let's get together!

Gleaming P-E Exteriors
Are scratchproof, mar-proof, permanent in color, wipe clean like a dish.


FERRO

ENDURO *Brightwork*

HELPS KEEP COIN SLOTS BUSY

To sell—*and keep on selling*—beverage dispensers are placed in high traffic locations, often fully exposed to weather.

Still, they should sparkle quality—inspire confidence—to attract thirsty "prospects." Just as important, they must stand up under rough usage.

That's why Mundean Manufacturing Company, Columbus, Ohio, who made this beverage merchandiser, uses ENDURO Stainless Steel for tops and trim. Judging from nationwide performance reports, ENDURO brightwork will help keep the coin slots busy for years to come!

Tough ENDURO *retains* its distinctive luster—resists rust and corrosion—resists abrasions and dents—requires little maintenance. Its hard, smooth surface is easy to clean and keep clean, *always*. Naturally, there's no plating to wear or peel.

Chances are, ENDURO Stainless Steel can *scintillate* the eye-appeal and *buy-appeal* of your products . . . at the same time, increase their wearability—their life span. Why not talk over the possibilities with Republic metallurgists? There's no obligation, of course. Just write.

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

Republic
REPUBLIC STEEL
ENDURO® STAINLESS STEEL

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

Speaker's table at a luncheon session during Pressed Metal Institute spring technical meeting.

Metal stampers hold technical meeting

program of Pressed Metal Institute spring technical meeting includes panel discussions on "safety at the press" and "choosing the right press"

(illustrated with finishfotos)

A RECORD NUMBER of metal stampers attended the 4th annual Spring Technical Meeting of the Pressed Metal Institute, held in Cleveland, Ohio, March 25-27, at the Carter Hotel.

All the sessions were well attended, indicating that the program committee had done an excellent job in choosing their speakers and topics. Included were discussions on "Press Guarding," "Designing Safety into Dies," "The Right Press for the Right Job," "Work Simplification," and "Drilling, Tapping and Counterboring in the Stamping Plant."

PRESS GUARDING

Moderator for the session on "Press Guarding" was C. Glenwood Rose, president of Judson & Rose, Inc., Philadelphia, and chairman of the PMI Safety Committee.

Panel members included: Stephen V. Hart, chief engineer, Electronic Control Corp., Detroit; Frank M. Salisbury, president, Security Controls, Inc., Buffalo; W. J. Searjeant, president, Searjeant Metal Products, Inc., Mendon, N. Y.; E. U. Whitacre, general manager, Positive Safety Mfg. Co., Cleveland; and Arthur S. Kelly, senior engineer, power press section, National Safety Council.

Photoelectric press guard

A photoelectric device, which consists of a curtain of light beams across the danger zone of a press, was described by Hart. The minimum obstruction is 1½ inches, corresponding to the thickness of a stretched-out hand. Consequently, stated Hart, should an operator reach too far into the press, thus obstructing the curtain of light beams, the balance of the electronic device is upset, and the equipment stops the press.

The photoelectric unit can be used directly with either hydraulic or electrical control of the clutch and brake, stated Hart.

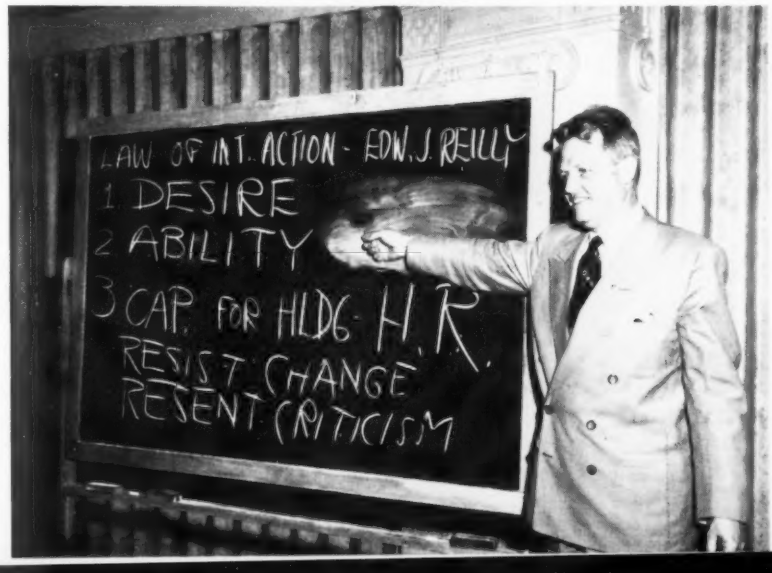
Radio "loop" controls

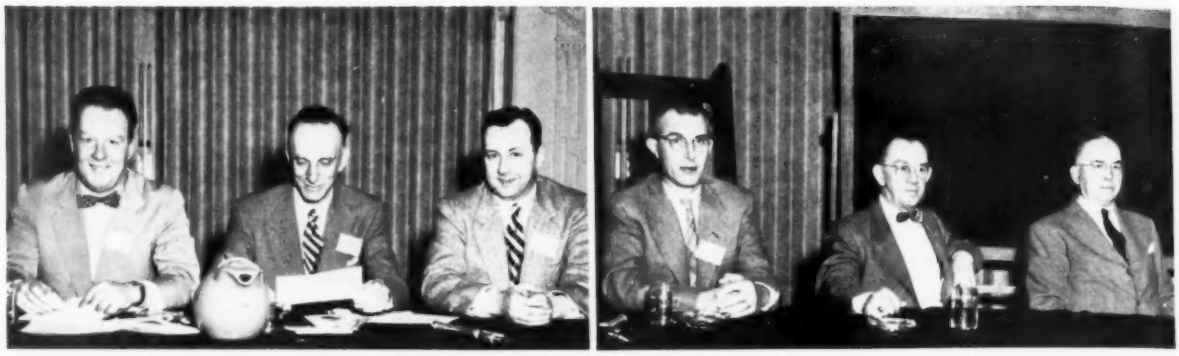
Salisbury described a safety control device which incorporates a radio field set up between two metal loops surrounding the danger zone of a press.

According to Salisbury, the "loop" control works much like a miniature radio. Metal loops form boundaries of the danger zone. Two ¾ watt oscillators in a control box generate electrical impulses, and send them through a shielded connecting cable to the loops. The loops pick up the impulses, transmit them as radio waves into the space to be protected. If any conductive material—an operator's hand for instance—enters the field, the balance is broken. The imbalance energizes relays which slam on the brake, and shut off the power.

The problem of getting stock into the die without shutting down the press was then answered by Salisbury.

Allan Mogensen presented a dynamic talk on "work simplification" and how such a program can be of great benefit to industry today.





Panel on "Safety at the Press", left to right: C. Glenwood Rose, Judson & Rose; Stephen V. Hart, Electronic Control; Arthur S. Kelly, National Safety Council; W. J. Searjeant, Searjeant Metal Products; Frank M. Salisbury, Security Controls; and E. U. Whitacre, Positive Safety Mfg.

A thin metal sheet — the same width as the stock to be used — is attached to the female half of the die or to the bolster plate of the press. Being grounded, the sheet serves as a "splatter plate" for the radio waves given off the lower loop. Waves from the insulated loop bounce off the plate, creating an unprotected stock-feeding zone. The zone is big enough for work to enter, but too small for hands to enter.

Sweep-type and basket guards

The use of both sweep-type and basket guards was described by Searjeant.

The operating principles of the sweep-type of guard is based on the sweep action of the guard arm which is mechanically operated by the ram. Any downward action of the ram causes the guard arm to sweep across the working areas of the press, pushing the operator's hands aside long before the die closes. When the press is not in operation, the guard arm remains out of the way.

Adjustable basket, or enclosure-type guards, described by Searjeant, consist of a series of U-shaped rods which can be adjusted up or down,

F. R. Widmer, of Republic Steel, predicted that the supply of steel would be more plentiful in the second half of 1953.

and if necessary tilted in or out as required, in order to totally enclose the danger zone of a press. Stock can be easily fed into the die and pieces ejected by air, stated Searjeant.

THE RIGHT PRESS FOR THE RIGHT JOB

Moderator for the session on "The Right Press for the Right Job" was Raymond Peterson, president, Peterson Engineering Co., Toledo, O.

Panel members included: W. B. Saul, vice president, production and engineering, L & J Press Corp., Elkhart, Ind.; Norman Dunlap, director of sales, Minster Machine Co., Minster, Ohio; C. F. Sherman, general sales manager, Henry & Wright Division of Emhart Mfg. Co., Hartford, Conn.; Melvin D. Verson, executive assistant, Verson Allsteel Press Co., Chicago; Gordon Sommer, chief engineer, Clearing Machine Corp., Hamilton, Ohio; and H. B. Morse, sales engineer, E. W. Bliss Co., Canton, Ohio.

Gap-frame, inclining presses

"Factors to be Considered when Purchasing a Gap-Frame Press, and

Panel on "The Right Press for the Right Job": Norman Dunlap, Minster Machine; H. B. Morse, Bliss; Gordon Sommer, Clearing Machine; Melvin D. Verson, Verson Allsteel Press; W. B. Saul, L & J Press; Raymond Peterson, Peterson Engineering; and C. F. Sherman, Henry & Wright.

Panel on "Drilling, Tapping and Counterboring": George Hines, Magna; Harry Fussner, National Acme; Walter Hill, Cleveland Twist Drill; C. C. Caditz, Northern Metal Products; Waldo Russell, Cleveland Twist Drill; A. V. Bodine, Bodine Corp.; James Butler, Magna; and O. E. Koehler, Greenfield Tap & Die.

the Advantages of Inclining Presses" were discussed by Saul.

The well-directed purchase of a gap-frame press, like any other, needs the consideration of several factors. The first factor, stated Saul, is that of work dimensions which are well-understood. A second factor is the dimension of tonnage, which is just as concrete as the factor of work dimensions, but much more easily overlooked. A third factor is that of work requirements, or anticipated output.

"The accuracy tonnage ration is somewhat lower in the gap-frame press than in the straight-side or other types of construction. That is of necessity, and is not a fault of the press," stated Saul. "In figuring a press for accurate operation, fine complicated dies, one should use a much lower tonnage accuracy ratio than in a press of another type. By this I mean, if you want to do a 20-ton job that is very fussy and has an intricate die, the only type of gap press that would be logical then would be maybe one of 30 or 40 tons, so you would hold your deflection down as near to zero as possible."

Saul then described the advantages of inclining presses. The first and most apparent advantage is in work removal — by gravity to tote box or conveyor. Loading or feeding devices are sometimes assisted by an inclined position. An example of this is the strip-feed equipped press. Also, for hand feeding strips into dies fitted with automatic gauges, the stock keeps to the back guide in an inclining press, and feeding is accomplished easily and rapidly.

Straight-side presses

"Factors to be Considered when Purchasing Straight-Side Presses" was the topic discussed by Dunlap.

In considering the right press for the right job — in the straight-side category — tonnage enters into the picture very heavily. "I think that we can make a little more emphasis on off-the-bottom-of-the-stroke tonnages, because of the longer strokes involved," said Dunlap.

"In my estimation," continued the speaker, "the greatest hazard to straightside press equipment is the tonnage factor. A lot of people figure tonnages on jobs, and they don't realize how rapidly the capacity of the machine drops off at the bottom of the stroke.

Another problem is that of single or double-geared presses. "That is connected directly with the drawing speeds that you can work your metal, and that is in turn tied in with the length of the stroke, and there again you are considering the velocities off the bottom of the stroke.

Then followed a discussion of single-end or twin-drive crankshafts. "The addition of twin drive to a straight-side machine increases the off-the-bottom-of-the-stroke tonnages approximately 50 per cent," Dunlap pointed out.

Panel on "Die Breakage and How to Minimize It": W. P. Fouts, Dayton Rogers; Melvin Verson, Verson Allsteel Press; Stanley R. Cope, Acme School of Die Design Engr.; J. W. Gulliksen, Worcester Pressed Steel; Herbert C. Johnson, Johnson-Claflin; and Floyd B. Keser, Jr., Smith-Keser.

O. D. Lascoe, of Purdue; J. I. Karash, of Reliance Electric & Engr. (who discussed designing safety into dies); and P. W. Beedle, of Victor Mfg. & Gasket.

Press brakes

Verson then discussed "Factors to be Considered when Purchasing Press Brakes."

The first factor is the type of clutch. "Most press brakes on the market are equipped with a foot-treadle-operated friction clutch," he said, adding that auxiliary electrical controls are also available for these clutches. Larger size press brakes are built with straight pneumatic clutches.

Another point to consider is the depth of section, in the bed and ram, because the depth of section and not the thickness of the plate primarily determines the deflection.

Other factors to consider include the lubrication system, assessibility for maintenance, adjustment of ram (whether it can be tilted to perform fade-out work or cone bending), and the type of gearing.

Verson also touched on the subject of the new hydraulic press brakes. "The hydraulic press brake is intended primarily to serve in a heavy fabricating shop, where large plates are bent to any angle, conical shapes formed, and where tonnage requirements are very heavy. Equivalent tonnage for tonnage, a hydraulic brake will be cheaper than the mechanical, but it is not a machine on which you can do the average run-of-job shop work," he stated.

Double-action presses

Sommer followed with a talk on "Factors to be Considered when Purchasing Double-Action Presses."

Basically, a double-action press is used to perform those draw operations which cannot be done successfully in a single-action press, Sommer pointed out.

The line of usefulness between both single and double-action is sometimes not too distinct, said Sommer. A double-action press is generally required for the drawing of regular shape parts, with a depth of 7" or more, while for a depth of between 4" and 7", a single-action might be appropriate for one part and a double-action appropriate for other parts. Regular-shaped stampings would ordinarily be round, square, rectangular, etc.

A double-action press is also desirable for drawing of irregular-shaped stampings, with a depth of three inches or more. The reason is that it is possible to adjust separately each corner of the blank holder slide, and thus vary the pressure at various points around the periphery of the drawn stamping.

Sommer added that when purchasing a double-action press "it is well to specify only the depth of draw, without trying to specify the strokes of the two slides. The procedure will allow the press manufacturer to proportion these strokes so that the optimum dwell action can be obtained with the blank holder slide."

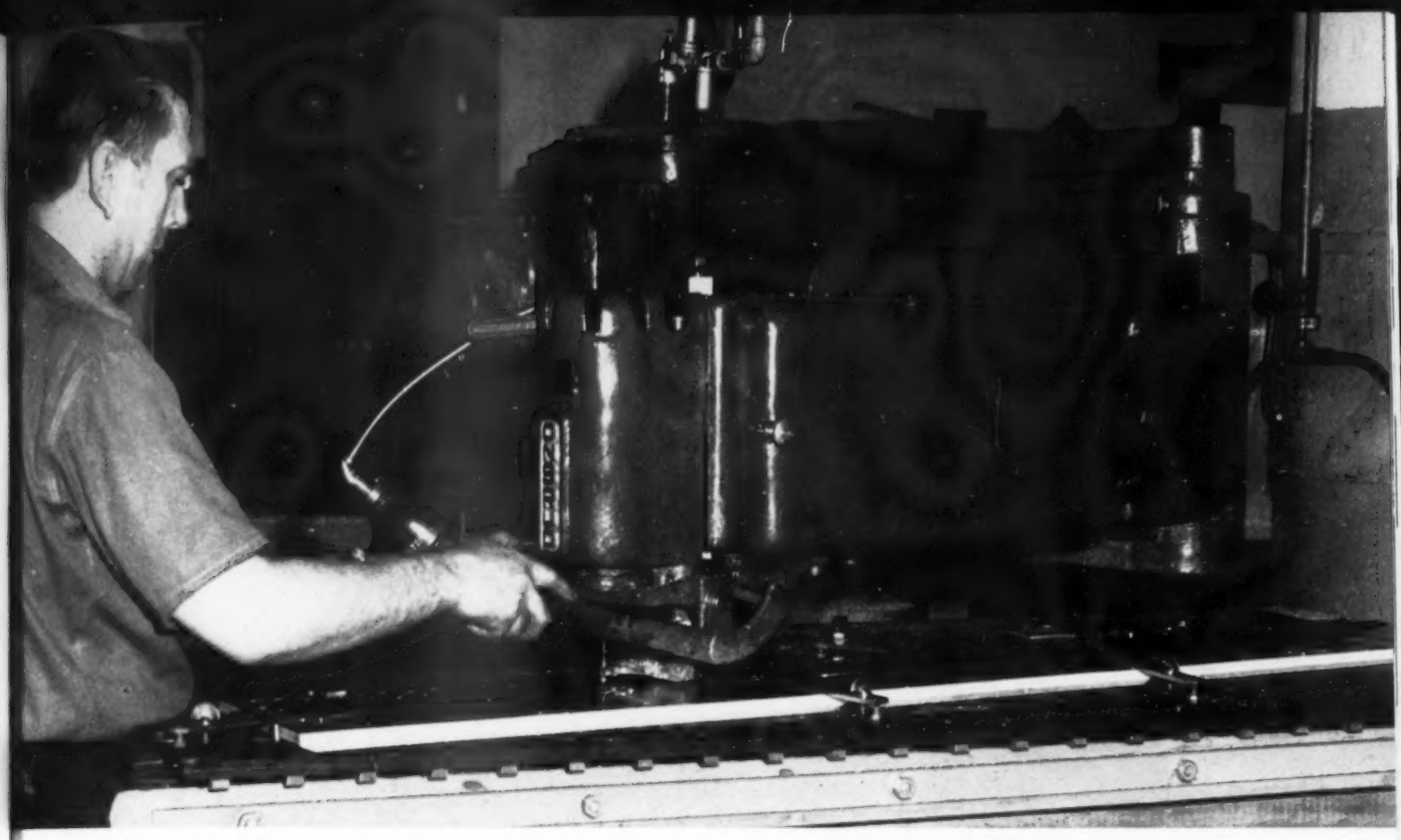
One of the many exhibits at the Pressed Metal Institute meeting. Shown is J. R. Reinertson, midwest engineer for Pivot Punch and Die Corp.

THE STEEL OUTLOOK

At a luncheon session, F. R. Widmer, assistant manager of commercial research, Republic Steel Corp., discussed current trends in the production and use of sheet and strip, which has almost doubled since 1946.

Widmer ventured his own personal opinion that automotive production would begin to slacken in the last half of this year, while at the same time the production of newer appliances (such as clothes dryers, TV, and room air conditioners) will continue to increase year by year regardless of the overall appliance picture. He suggested to the stampers that they begin looking into new fields for prospective business, especially urging them to work with firms which have a new product which promises a big future.

He concluded that "during the second half of 1953 and in 1954, job stampers will have to improve their competitive position," for soon purchasing agents will have a "5 per cent leeway for moving around".



Radial unit used on a specialty job — 8 thin aluminum sheets are cut simultaneously while clamped in fixture.

ADS OUT

The "roll-top" desk goes modern

an "old time" metal furniture manufacturer restyles products and re-equips plant — a story of fabricating, finishing, materials handling operations

by Walter Rudolph

Exclusive feature finish

Back in the late 19th century, when Jamestown, N. Y., was already carving its niche in the industrial world as a leader in furniture production, Art Metal Construction Co. was beginning to make its own mark for fabricating a certain type of furniture—"office furniture," if you will, but more commonly designated today as office equipment, such as desks, chairs, filing cabinets and so forth.

Art Metal has done many unique things in its field. It lays claim to "firsts" that are notable in metal fabrication and finishing. For instance, it was the first to banish the old fashioned roll-top desk, and its companion discomfort and eyesore, the straight-back wooden chair. Metal replacements are the ultimate in beauty and utility, pleasing to the eye and the posture and making possible improved efficiency in routine office work.

Currently, the trend is toward light-toned, and light-weight, office equipment — in furniture as well as auxiliary equipment. Art Metal last year took the drapes off one of the most modern office buildings in the country, its new facility in Jamestown which is practically a "showcase" for its own examples of office equipment in the modern mode.

Of course, *finish* has little space for more than a mention of this block-long, three-story building. But to its rear is an older structure (parts of which were in the manufacturing picture back in the early years) running to five floors, in which the company fabricates and finishes thousands of office desks yearly, as well as many specialty items, some of them for defense contracts. We will try and show something of the extensive facilities pointing to the production of desks, in particular.

Out goes manual handling — in comes conveyors

For the record, in recent years hundreds of thousands of dollars

At one end of steel storage area, shears like this 10-footer cut sheets to size for table panels. Note the use of overhead tramrail handling equipment.

Here worker knocks out leg guides for desk fabricatio feeding sheet steel from table in foreground.

have been spent toward boosting production in line with trade demands. A large percentage of such expenditures was poured into installation of a conveyor system, several blocks long. As one company official put it:

"We saw that, in line with recent attention to materials handling techniques, it was imperative that we get away from manual handling as much as possible. Handling and re-handling, before getting the finished product, was wasteful of time and labor. By reducing handling practically to nothing more than hang-on and take-off (of sub-assemblies for instance), we accomplish a tremendous increase in production."

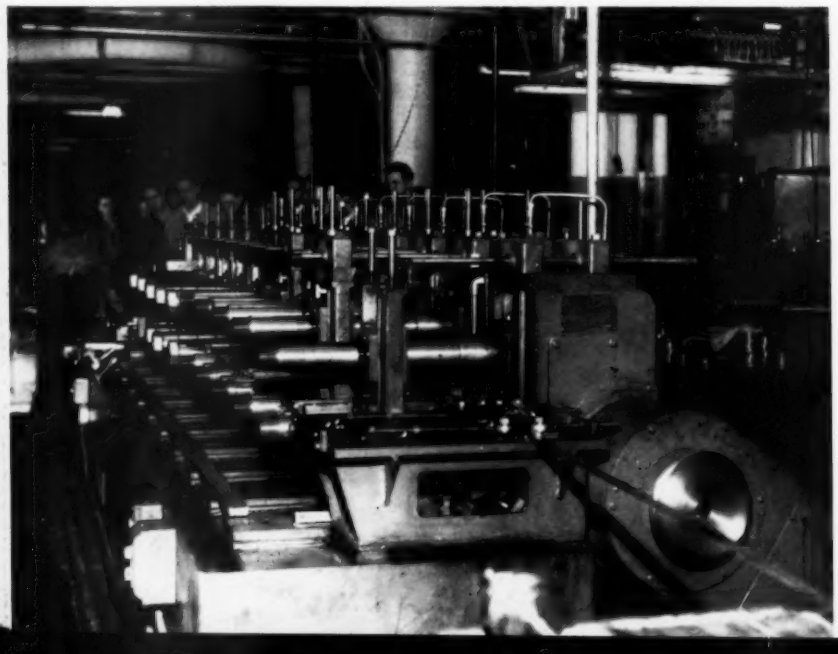
For instance, welders and metal finishers will place drawers and other parts on the conveyor for the trip through degreasing, and then to the dip tank. Both manual and automatic type dipping is done, dependent upon the shape and finishing specifications of the piece. Again, the conveyor travels the painted parts through drying — winding up in storage adjacent to final assembly.

Improved handling of steel

Another improvement toward speedier handling, and therefore faster fabrication, from stock to assembly, is a new steel storage shed. Formerly, incoming loads of steel on semi-trailer trucks were unloaded outside in all kinds of weather, and after awkward juggling in a cramped receiving yard.

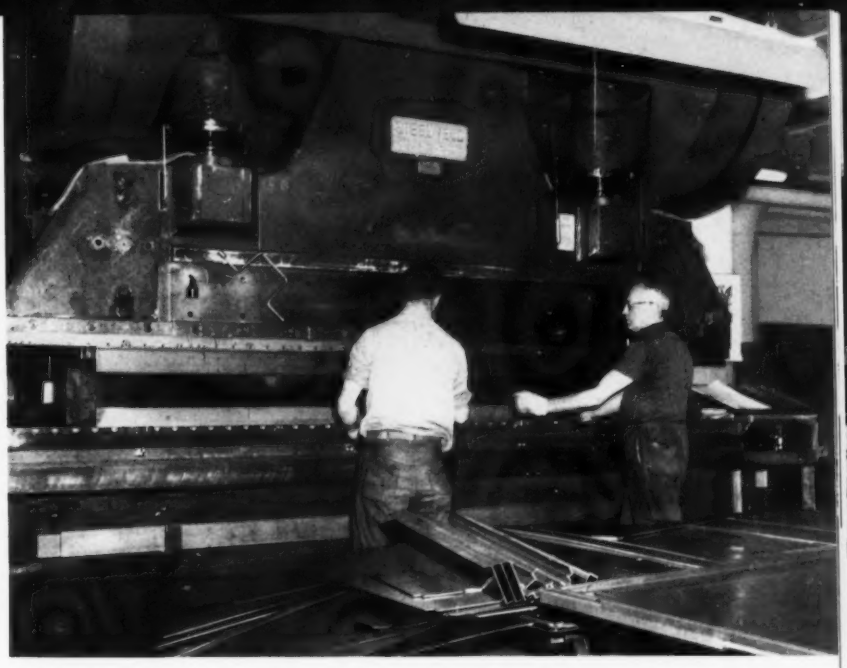
Today, there is a fine receiving shed, wherein trucks are covered for unloading, and scrap trucks similarly can receive their loads more efficiently. This modern building is about 80′ x 150′ x 30′, and is spanned by a tramrail crane with the latest sheet, roll and box handling equipment. At the end nearest the press room, batteries of shears from a few feet to 10 feet in capacity, daily cut to size

Drawer rails for desk drawers are mass-produced on this unit, one of a duo. Coil stock is fed from holder in foreground.



Precision welding eliminates much metal finishing, h here gas-welded corners on a shelf are ground dow

pleted offset press work in foreground. Worker feeds es into press to make side and bottom desk rails.



This big brake does many forming jobs on desk components. Here it is forming counter pieces on a specialty job for Aluminum Company of America.

thousands of pieces of sheet steel that are moved by fork truck to press position for desk and other fabrications.

Over 125 units in tool room and press shop

Art Metal makes most of its own dies. Die-making is abetted by a sizeable machine and tool-making shop, with between 50 and 60 machine tools such as milling, planing, shaping and drilling machines. The press shop is similarly versatile in equipment, with presses and brakes ranging from the smallest to multi-hundred-ton units, totaling 75 or more.

Job lots of stamped and formed pieces move variously to plating (automatic setup, zinc plating of internal parts of desks, etc.,) and welding departments. Extensive fixtures speed welding — the front frame on a desk pedestal, for instance, is four pieces joined in a fixture by 16 spot welds for a sub-assembled unit.

Two-story degreasing unit

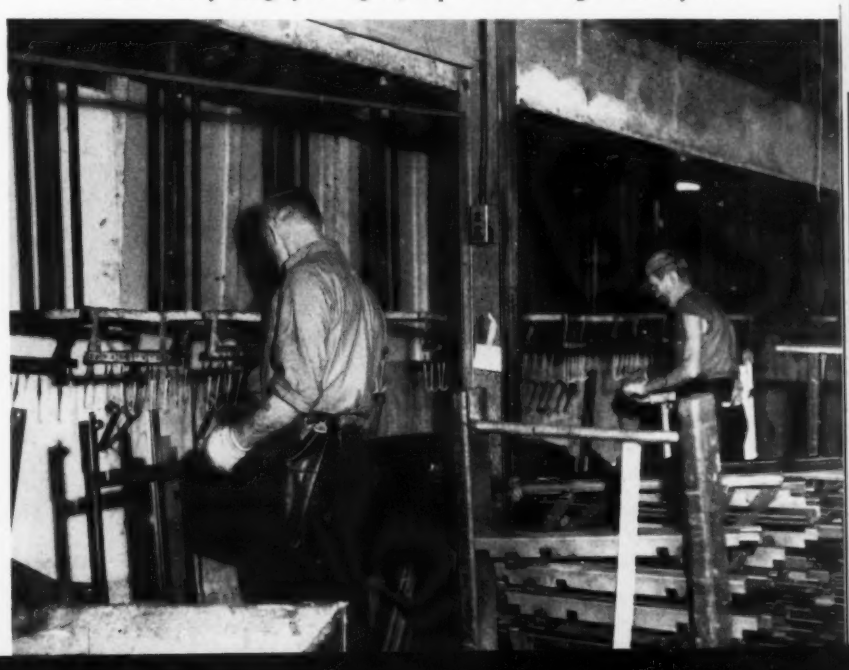
Naturally, precision welding aims at elimination of metal finishing as much as practical, but there is nevertheless a battery of metal finishers employing grinding and sanding equipment for finishing of weldments and dings before degreasing. The latter operation is largely done in a huge system that is suspended from one floor through and into another, because of tank size and spray-type application of degreasing fluid.

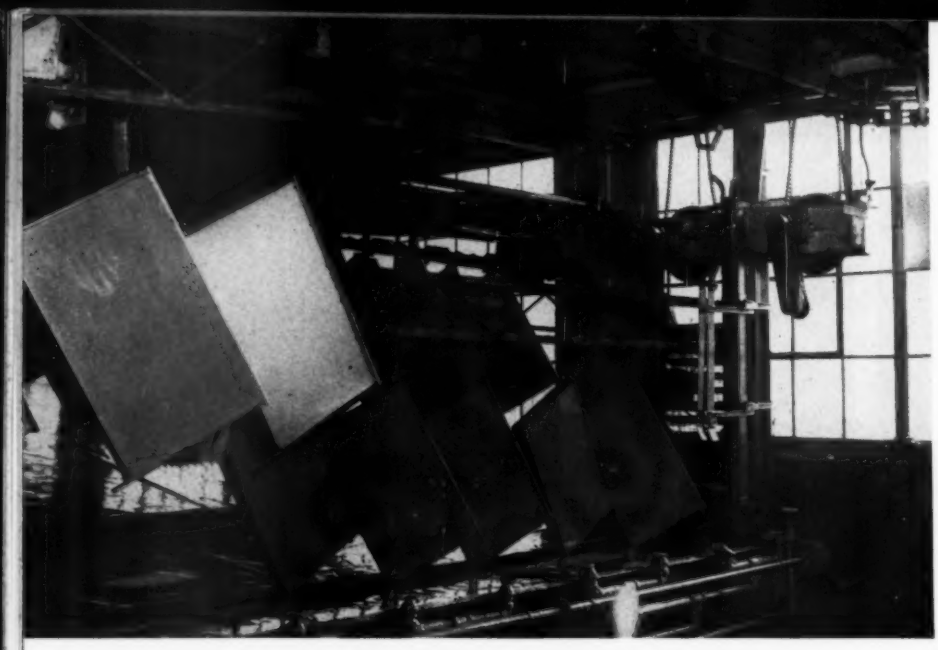
Water wash spray booths have "elevator" turntables

Application of synthetic enamels (principally a standard grey for desks) is done in several water-wash spray booths of conventional size. Two desks can be sprayed simultaneously through use of an ingenious floor turntable that is raised for circular motion by air, after desks are loaded thereon. Gas-fired ovens have

pot welder puts 16 welds on front frame for a desk edestal, finishing sub-assembly in fixture on table.

Many small, concealed (in final assembly) desk parts are plated; here automatic zinc plating cycle begins, as pieces are hung on conveyor.





Conveyorized dipping operation on desk drawers, with load just leaving 2100-gallon tank, and another hanger-load entering view from left.

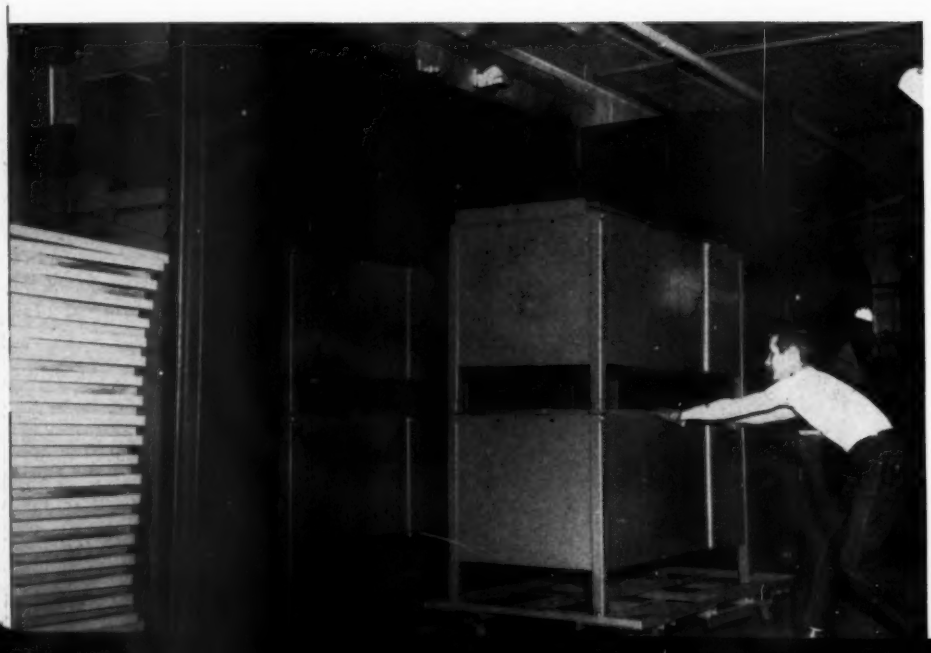
a floor conveyor chain that travels desks through each oven, between loading and unloading ends, at the rate of two desks every 12 minutes. Baking temperature is 325°F. Inspection and touch-up are followed by second-coat application, and baking.

Linoleum tops, in the modern trend, are applied after adhesive is sprayed on the linoleum piece and the desk top panel. The whole is then placed, in series, in hand clamps, although a special press is under construction to better handle this job. Trim and hardware are installed at final assembly.

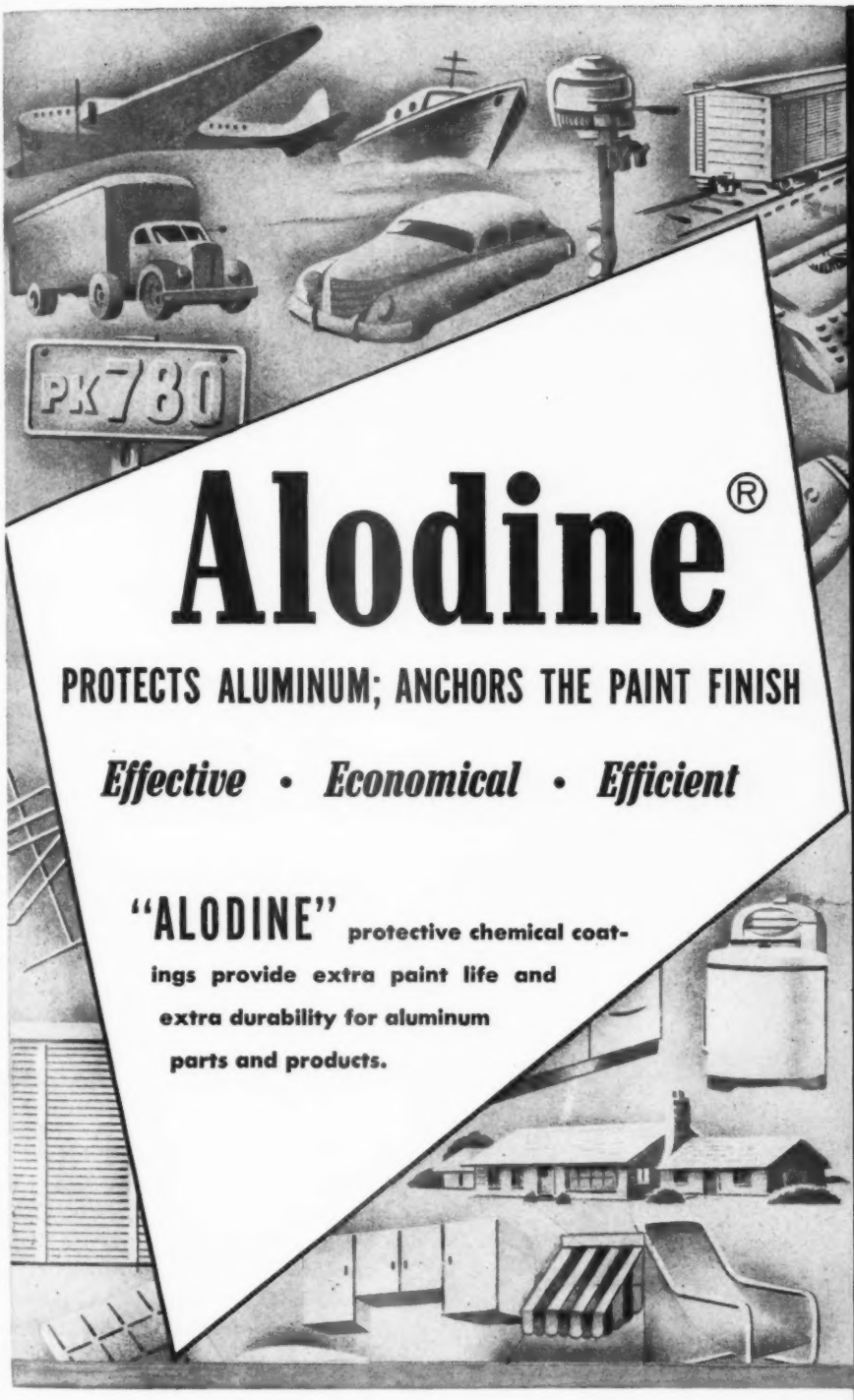
Considerable study has been devoted to packaging and shipping of desks, which have more than the usual number of parts as compared to products of similar size, such as a bench, or counter. Two types of packaging are most commonly employed. On the fastest moving model, a wrap-around plywood cover goes over the desk, after insertion of various shock-absorbing materials, such as creped wadding, where drawers and exterior surfaces might contact each other or the packaging wrap-around. Cardboard panels protect some surfaces.

Another common packaging method employs wood crating after placement of protective wadding and cardboard. Both methods are for commonly used rail shipment. The wood crates, many of them sub-assembled to speed mass crating, come to the plant in carload lots. *(Assembly and packaging operations are shown in Safe Transit section, Page ST-3.)*

Center: Two desks get finish coat on turntable in booth; air power raises table at operator's will, allows him to push desks around as required.



Desk finish is baked in hour-long trip through ovens at 325° F. Castered pallet is moved through oven by floor-level conveyor chain.



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Extreme agitation in the liquid shown here is caused by ultrasonic waves projected from a ceramic element, known as a transducer, which is the key to the new industrial cleaning process developed for industrial application. Outline of the transducer can be seen a few inches below the surface.

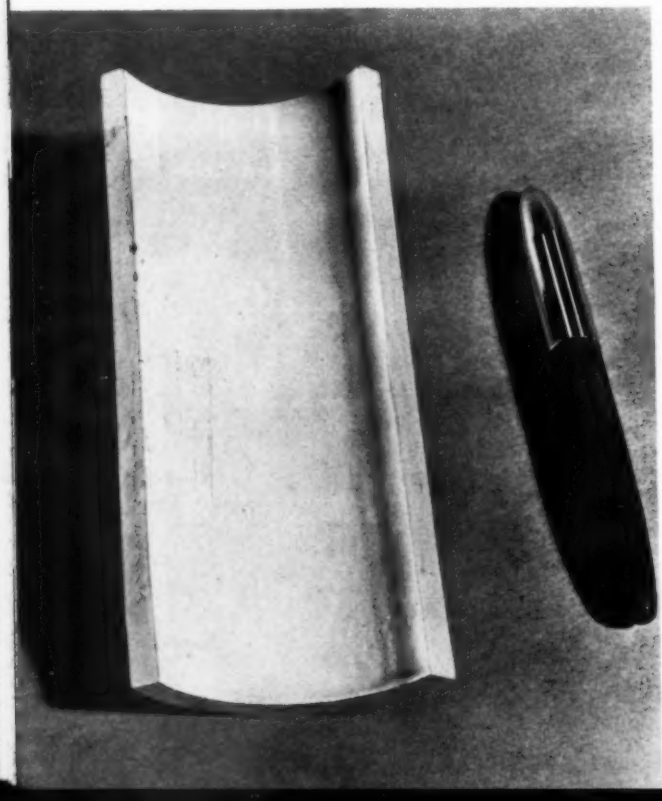
ULTRASONIC

for industri

A NEW method of industrial metal cleaning features a man-made element for directing sound energy—a development which technicians say promises to open the door to far-reaching advances in a wide variety of industrial fields. The new process is presented as a practical method of metal cleaning through the use of ultrasonic waves.

Use of a new transducer element transfers ultrasonic cleaning from the laboratory stage to a production method. By employing a new element in place of the quartz crystals previously used in ultrasonic experiments, the limitations caused by the size and properties of quartz are reported to have been overcome.

The use of ultrasonics for cleaning is not a new or revolutionary idea. Laboratory technicians have been conducting such experiments for years, and more recently have concentrated their efforts in the search for a transducer far more flexible than natural quartz.



Fountain pen shows comparative size of the man-made, ceramic transducer—heart of the new ultrasonic cleaning process. Its size, focal properties and flexibility are considered superior to natural quartz crystals used in previous ultrasonic cleaning processes. The ceramic elements can be connected in multiple units.

Ceramic transducer does the work

The element is a curved piece of ceramic resembling a six-inch-long pipe, cut in half along the longitudinal axis. The ceramic pieces, which can be connected in series and arranged as desired, are designed to offer focusing and flexibility properties.

In the ultrasonic process, electrical energy is transmitted to the ceramic transducer, converted into sound energy, and projected through a solvent at a frequency of 430,000 cycles per second. The solvent currently being used in the process is trichlorethylene; however, the process is not limited to this material. Because a

NICLEANING

rrapplications

potential of only 40 volts is required to operate the ceramic transducers, they can be safely immersed directly in the solvent. This eliminates the complicated sealed containers that are required with other transducer materials and high voltages.

For manual or conveyorized operation

Material to be cleaned is placed in the solvent, either manually or by conveyor, directly in the path of greatest focal intensity of the ultrasonic waves. In this area an extreme turbulence is created, resulting in a deep and penetrating cleaning action that removes, almost instantaneously, all dirt, grease, chips and microscopic particles of soil from even the most intricately designed and close-fitting parts.

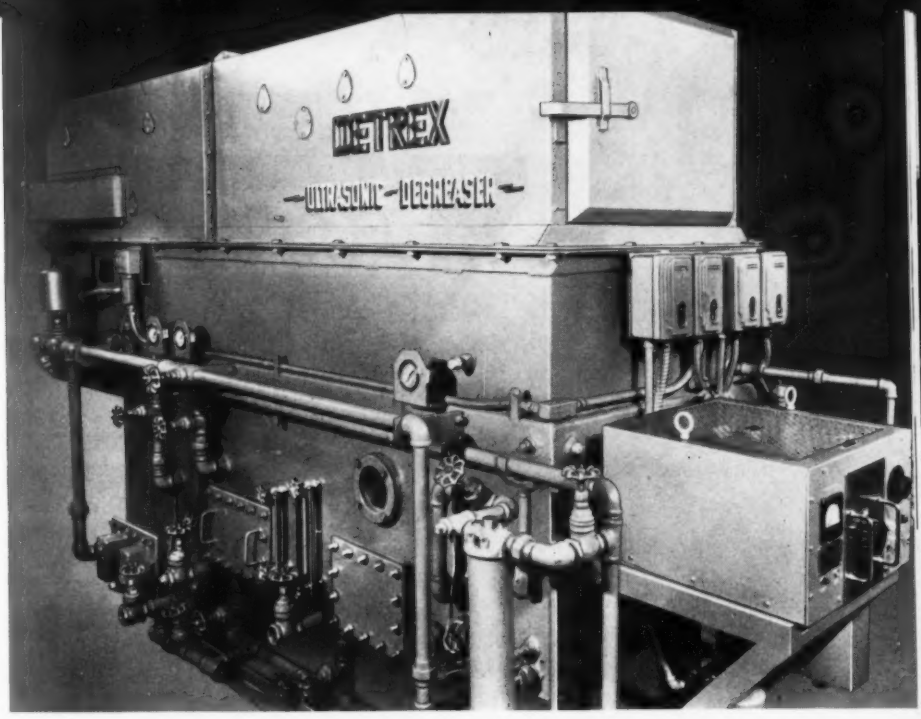
Because of the design of the ceramic transducer, the sound waves converge to a straight line as long as the transducer itself. The focal area in some transducers is confined to a single point, thus limiting ultrasonic cleaning almost to a one-at-a-time rate, obviously impractical for industrial demands.

The high frequency hypersonic generator used in the process is protected by numerous safety and overload devices and provides adjustable tuning drawers that provide frequency control. The unit operates on low voltage current.

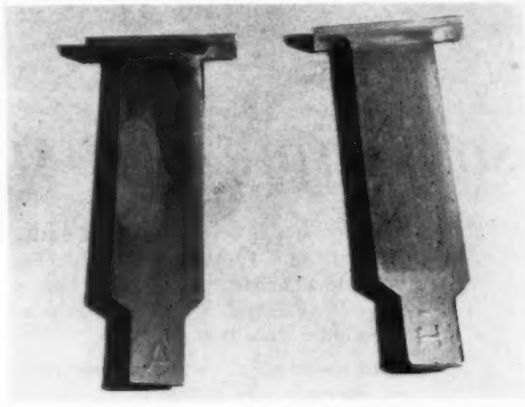
First unit designed for electric shaver parts

First commercial installation employing the ultrasonic process is at the Electric Shaver Division of Remington Rand Inc., Bridgeport, Conn.

to Page 80 →

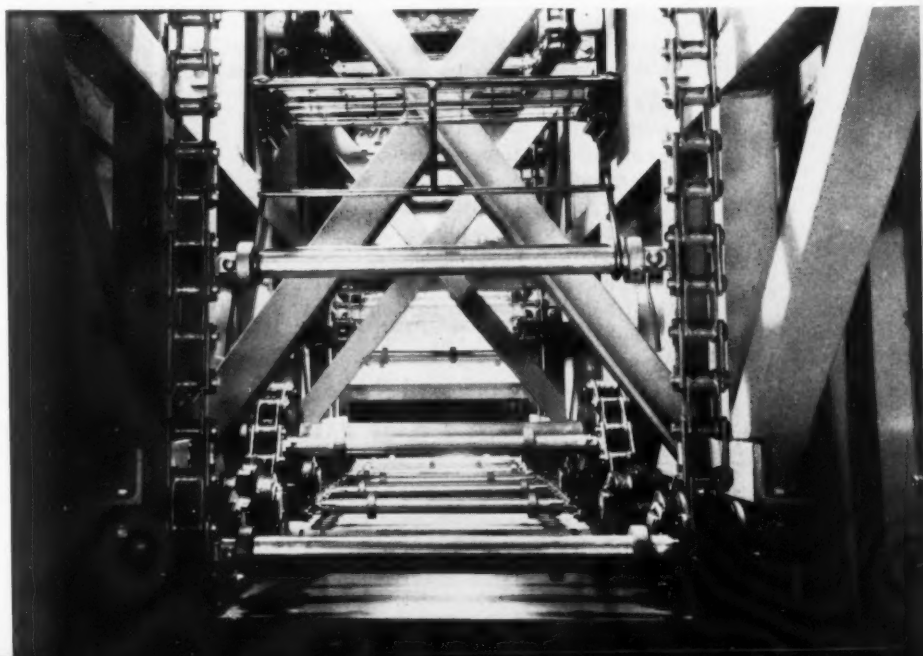


Fully-conveyorized, ultrasonic degreaser developed for the electric shaver division of Remington Rand Inc. Final cleaning of parts by the use of ultrasonic waves is incorporated in the regular degreasing cycle.



Iron oxide paste on jet engine blade on left was removed completely and rapidly by the new process.

Interior view of fully-conveyorized, ultrasonic degreaser at Remington Rand. Removable trays are designed for parts handling and easy stacking. Each tray can hold 50 shaver heads.



sometimes—a sign can last too long

Perhaps you've seen a sign that outlasted its usefulness . . . like "Speed Limit 10 Miles", or "Hot Dogs 5¢" or maybe even "Painless Dentist." Most likely they were porcelain enamel and at least 20 years old. We've seen quite a few that were a lot older than that.

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1680

Alkali-fluoro-silicate glasses as vitreous enamels for aluminum

by E. C. S. Rao • UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

ALUMINUM has become a very important metal for several purposes due to its light weight and other desirable properties. However, it is readily oxidized and attacked by moisture and by acid or alkaline atmospheres. The application of a vitreous enamel would greatly enhance the versatility of aluminum.

Editor's Note:

This article represents a prize winning paper in a Ferro Corporation contest for the best student papers on porcelain enameling.

For architectural and other outdoor uses, in fact, wherever the metal is subjected to constant weathering conditions, aluminum is at an advantage, because the exposed surfaces do not oxidize as rapidly as sheet iron and the oxide formed does not discolor the enamel. Enameled aluminum is more durable than painted or lacquered metal or wooden surfaces and it is easier to install than terra-cotta. Furthermore, the light weight and the adaptability of cutting to size combined with the flexibility of aluminum recommends its use in many situations. These characteristics enable enameled aluminum to advantageously replace enameled sheet steel for some uses. However, the major applications of enameled aluminum will be in the extension of, rather than in the replacement of, the conventional enameled metals. For example, certain parts of the airplane made of aluminum or aluminum alloys are subjected to the action of exhaust gases. The enamelling of these parts would possibly increase their life considerably.

The melting point of aluminum is 1220° F. (660° C), far lower than the fusion point of almost all ceramic raw materials. The problem consists of developing an enamel (1) that will melt to a glassy surface much below the melting point of aluminum, (2) that will adhere to the metal so that the enamel will be of commercial use, and (3) that the enamel will have a reasonable amount of resistance to weathering conditions, as well as acids and alkalies. These difficulties have prevented much progress in developing an enamel for aluminum. It is only recently that some work is being done on this subject, and now at least two plants [1,2] are engaged in the production of enameled aluminum on a substantial scale, and several others are reported to be in various stages of development.

Review of literature

To achieve the low fusibility, high lead content glasses were developed [1,3,4] and are currently being used. Obviously the toxic condition of the enamel is unsatisfactory for the operators' health, and the presence of high lead content increases the solubility of the glass. Therefore, attention has been directed to the non-silica glasses[5], which include the phosphate, the borate, and the fluor-

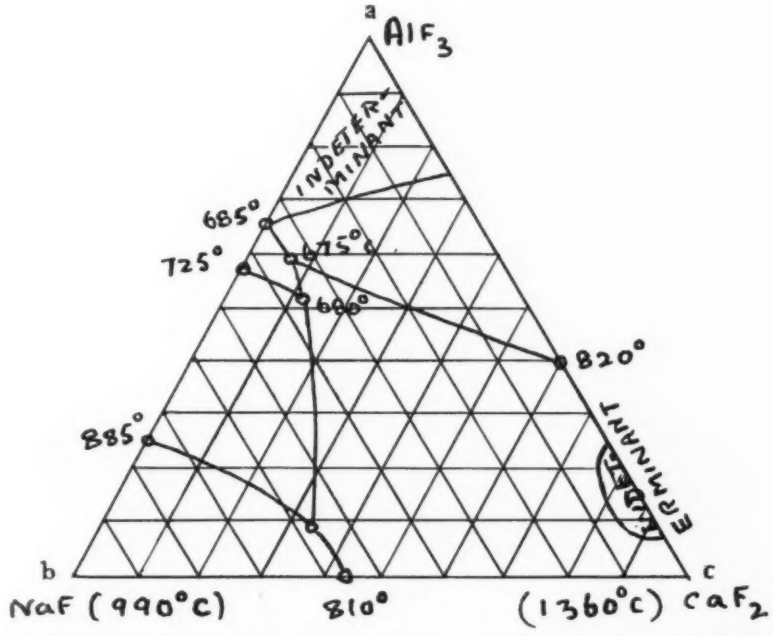


Figure 1 — System NaF—CaF_2—AlF_3 (per cent by weight) pp. Fedotieff and W. P. Iljinskii, J. anorg. u. allgem. chem., 129, pp. 106, 107 (1923).

Table I

Frit Compositions of Test Enamels (%)

Oxide	Enamel Number								
	1	2	3	4	5	6	7	8	9
Na_2O	22.2	16.8	17.8	25.0	24.8	24.8	8.3	20.1	20.3
K_2O	7.1	3.7	3.9	3.8	3.7	3.7	8.8	3.8	5.0
Li_2O							3.0	3.0	3.0
SiO_2	32.1	21.0	22.3	21.7	21.5	21.5	33.6	21.7	21.9
Al_2O_3	7.7	5.9							
B_2O_3	19.9	33.6	35.6	29.7	24.5	19.6	12.0	23.8	24.0
Sb_2O_3	5.8	4.8	5.1	5.0	4.9	4.9	5.0	5.0	5.0
NaF	2.3	8.0	8.6	8.3	8.2	11.0	8.4	8.3	
AlF_3	1.6	5.4	5.7	5.5	5.5	7.1	5.6	5.5	
CaF_2	1.2	0.9	1.0	1.0	1.0	1.5	1.5	1.0	1.0
ZnO						5.9	4.3	5.9	6.0
LiF									8.4

ide glasses. Of these, Asher[6] and Carroll[7] have worked on the phosphate glasses and reported promising results. They developed enamels resistant to boiling water, but attacked by strong alkalies and acids.

EXPERIMENTAL PROCEDURE

Enamel composition

The work reported in this article utilized the alkali-fluoro-silicate glasses. In the system NaF — AlF_3, an eutectic consisting of 63% AlF_3 and 37% NaF (by weight) is formed at 685° C. In the ternary system AlF_3 — NaF — CaF_2 (Fig. 1), two low melting eutectics exist, of which the low temperature composition 60.2% AlF_3 — 33.6% NaF — 6.2% CaF_2, was used in this investigation.

Fluorspar was utilized to introduce CaF_2 and cryolite ($3NaF \cdot AlF_3$) consisting of 60% NaF — 40% AlF_3 (by weight) was used for the introduction of these two fluorides. Since they are not present in cryolite in the same proportions as are found in the eutectic composition, the cryolite was modified by the addition of alumina as feldspar with a portion of the alumina being supplied by the oxide layer of the metal. The enamel, upon melting at the eutectic point, will take up additional alumina from the oxide layer of the metal and it was believed that this interaction between the enamel and the oxide layer should cause satisfactory adherence.

Making use of these eutectic points in the system AlF_3 — NaF — CaF_2, enamels melting from 1300° F. to 1500° F. were developed by Hunt and King[9] for use on sheet iron.

One hundred-gram batches were fritted by melting in an electric furnace at 1600° F. and subsequently quenched. The frit was ground dry for six hours in a porcelain ball mill. The dry powder was sieved through a 200 mesh sieve and was formed into a suitable slip. The enamels were applied by dipping in as much as the small quantities of the slip prepared did not permit spraying. The per cent frit compositions are given in Table I and the batch weights in Table II.

TABLE II

Batch Weight Composition (%)

Material	Enamel Number								
	1	2	3	4	5	6	7	8	9
Flint	5.6		14.8	21.9	15.1	14.6		10.2	2.1
Kingman feldspar	33.0	21.7					41.3	7.5	20.9
Borax	42.7	61.7	64.0	53.5	47.2	45.6	26.1	45.1	46.2
Sodium carbonate	5.1			11.1	11.6	11.2	1.8	9.1	5.9
Sodium nitrate	2.5	1.7	1.8	1.8	1.8	1.8	3.6	3.1	3.2
Sodium meta-antimonate	6.9	5.2	5.4	5.4	5.6	5.6	6.4	5.5	5.7
Cryolite	3.1	9.1	9.6	9.5	10.0	12.6	10.4	9.7	
Fluorspar	0.9	0.6	0.6	0.6	0.6	0.8	1.2	0.6	0.7
Potassium carbonate			3.8	3.8	3.9	3.8			
Zinc oxide					4.2	4.0	3.4	4.1	4.2
Lithium carbonate							5.8	5.1	5.2
Lithium fluoride									5.9

Metal Treatment

Detergents — The metal used was 3s aluminum alloy sheet, 1/16 inch thick. Of all the detergents tried, a commercial alkaline detergent was found most satisfactory for cleaning. A 5% solution, warmed to 80° C. to hasten the cleaning, removed all the grease and dye from the plates in about 5 minutes. The plates were dried in an oven at 80° C. Attempts were made to apply the enamel to the bare metal. The adherence was good while hot, but the enamel flaked off during cooling. Microscopic examination showed a bubbly surface of a thin coating of glass remaining on the metal and the glass had a vesicular structure. X-ray diffraction analysis of the bared metal and the flaked enamel did not give any conclusive data.

Accelerated oxidation by heat treating — The cleaned metal was preheated in an electric furnace at 1050± 20° F for ten minutes. On oxidation[8], the oxide layer grows until it reaches a certain thickness (about 40 A.), when the process stops. This is attributed to the fact that the work required to remove an electron from the metal into the oxide layer is very large. Quantum mechanics suggests a mechanism for some electrons to penetrate the oxide layer without receiving any thermal energy of activation, and predicts a maximum thickness for such a layer of the same order of magnitude as that observed. The preheated plates were cooled and a thin coating (15-20gm/sq.ft.) of enamel was applied by dipping. The plates were dried in an oven at 80° C. and fired for six minutes at 1050°±20° F. The enamel melted to a gray color and was uniformly spread over the plate. The metal could be seen through the thin coating of the enamel. Microscopic examination revealed a surface with small bubbles, similar to the ones observed on a conventional ground coat on steel and iron. Another coat (25-30 gms/sq.ft.) was again applied by dipping and the

plate fired at 1050±20° F. for seven minutes. The enamel melted to a white opaque glossy layer. Very few small bubbles were present and the appearance was good. Time did not permit performing the standard test for adhesion. The pieces were flexed and it was found that they could be flexed through any angle without chipping the enamel. The enamel showed excellent adhesion with the flexing serving as a relative test for adherence.

Hydrofluoric acid — The plates were dipped in 52% hydrofluoric acid for five minutes and washed in running water. The plates were enameled by dipping. This process gave a reasonably good adhesion, which could be improved by choosing a suitable concentration of the acid and the dipping time. However, this procedure was not pursued, since the noxious fumes of the acid makes the process somewhat unsuitable for ordinary plant practice.

The excellent adhesion obtained with the oxide layer has one important feature. This process simplified metal treatment and did not require any extra equipment. The metal can be preheated in the same furnace and at the same temperature as the enamel.

Results

The important results are summarized in Table III. Enamel No. 1 was based on those developed by Hunt and King[9], having been modified by the introduction of more Na_2O and B_2O_3, in order to obtain a lower melting point glass. However, Enamels Nos. 1, 2, and 3 were too refractory. Enamel No. 4 gave a satisfactory glass at 1100° F., but due to the large Na_2O content the coefficient of thermal expansion was much larger than that of the metal. Although there was a good adhesion while hot. the enamel released from the metal during cooling. The replacement of a part of the B_2O_3 by ZnO in Enamel No. 6 improved the durability, but the enamel did not melt below 1150° F.

An increase in cryolite at the expense of B_2O_3 in Enamels Nos. 6 and 7 also did not reduce the fusibility. Therefore, in Enamel No. 8, part of the Na_2O was replaced by lithium oxide and the fusion point was lowered considerably. The enamel could be melted at 1050° ± 20° F. The adherence was very good. The enamel did not show solubility in cold water, but the gloss was lost on boiling in water for two hours, indicating solubility. In Enamel No. 9, NaF was replaced by LiF and AlF_3 by an equi-molecular amount of Al_2O_3. This enamel melted to a good, glass surface at 1050 ± 20° F. and had excellent adherence. The enamels were white on firing, the opacity being due to the antimony trioxide and the fluorides.

Table III
Summary of Results

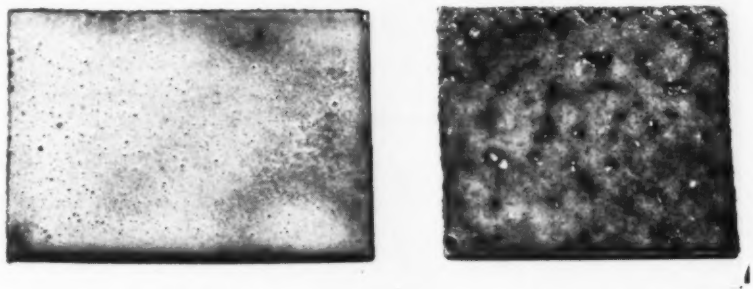
Property	Enamel Number 1	2	3	4	5	6	7	8	9
Fusibility at 1050±20° F.	Too	refractory		Partial fusion	Too	refractory		Good	Good
Adhesion				Poor				Excellent	Excellent
Solubility in Cold Water				Nil				Nil	Nil
Solubility in Hot Water				Poor				Poor	Poor
Appearance				Few bubbles				Very few small bubbles	Very few small bubbles

Plate 1 shows sample specimens of Enamels Nos. 8 and 9, while Plate 2 shows the same specimens after flexing. It is stated previously that the specimens were bent until the enamel chipped off, the angle of bend being used as a relative measure of adherence.

Conclusions

A vitreous enamel for aluminum based on alkali-fluoro-silicate glasses was obtained, utilizing the phase diagram of the ternary system AlF_3 — NaF — CaF_2, modified by the substitution of lithium for sodium. The

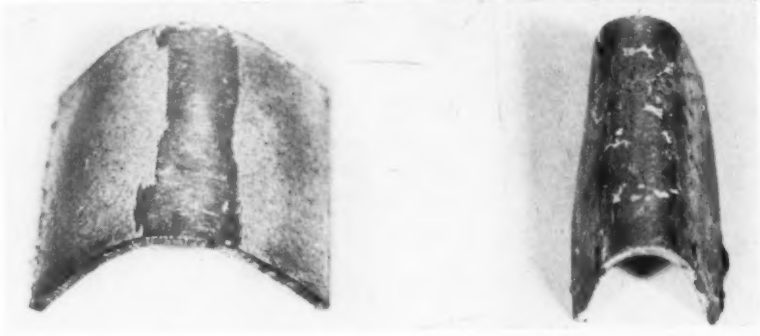
to Page 72 →



ENAMEL NO. 8 ENAMEL NO. 9

Plate 1 — Fired specimens of the most fusible enamel frits.

Plate 2 — Specimens of enamels shown in Plate 1, after flexing.



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PEI holds West Coast conference

executive officers of Porcelain Enamel Institute meet in Los Angeles with members of the Pacific Coast Enamelers Club

REPORTED BY *Gilbert C. Close* • WESTERN EDITOR

TO some 70 West Coast porcelain enamelers, the largest assembly of this group ever to convene in one meeting, the recent West Coast Conference of the Porcelain Enamel Institute, at Los Angeles, March 19-20, was a huge success. That this feeling was fully reciprocated by the 15 visiting PEI officers and members from the eastern states was well evidenced by both word and action.

"I'm certain that the success of this first West Coast meeting will result in other western meetings of greater portent," W. A. Barrows, PEI president, said. "While the main objective of this meeting was the direct presentation to western members of what the Porcelain Enamel Institute is doing in its role as the trade association representing the porcelain enameling industry, I am sure that another result of tremendous importance has been attained. . . . . Our plant visits, and our contacts with West Coast enamelers during this meeting, has made many of us fully aware for the first time of the extent, the newness, the scope, and the robust and progressive nature of the West Coast enameling industry."

The first day of the meeting was given over entirely to member plant visits to better acquaint the eastern members with West Coast operations, facilities and techniques. During this tour, plants of the U. S. Porcelain Enamel Co., California Metal Enameling Co., Norris-Thermador Corporation, and Smoot-Holman Co. were inspected.

The second day of the meeting was devoted entirely to business. It began with a meeting of the Executive Committee of PEI followed by a general all-day industry meeting to which all members and non-members of the West Coast enameling industry were cordially invited. About 50 enamelers were in attendance. A number of talks were delivered to point out the organization set-up, the activities and results achieved by PEI

Hyman Leggett, right, president of Pacific Coast Enamelers Club, greets W. A. Barrows, president of Porcelain Enamel Institute.

as a trade association representing the enameling industry.

During the evening of the last day, a joint meeting between visiting PEI officers and members and the Pacific Coast Enamelers Club was held. After-dinner speeches by W. A. Barrows and R. A. Dadisman, of Armco Steel Corp. and past president of PEI, pointed up respectively, "The Porcelain Enamel Institute and its Relation to the Industry," and "New Horizons of Porcelain Enamel." Some 70 enamelers, members and nonmembers of PEI, attended this evening session.

Digest of meeting data and speeches

The first session was presided over by Herbert Turk, Pemco Corporation, chairman, PEI Program Committee, and member of Board of Trustees.

J. T. Penton, of Cameo, and a past-vice of PEI, delivered the first talk of the day, during which he cordially welcomed the PEI officers and members from the eastern states. Penton then traced the history of the West Coast enameling industry, its rapid growth, its immediate accomplishments, and prospects for the future.

After reciprocating Joe Penton's welcome, *W. A. Barrows*, of Barrows Porcelain Enamel Co., and PEI president, proceeded to explain the function of PEI, and its organizational set-up. "We have six full-time employees in our Washington office," Barrows said, "and each man has a specific job to do. How well they are doing it will be explained in other talks."

Barrows then outlined the goals of PEI as a trade association representing the industry, and of accomplishments to date in the attainment of these goals. During his talk, he remarked on the "newness" of the West Coast enameling industry as compared with eastern firms, and extended a cordial invitation to new members.

P. B. McBride, of Porcelain Metals Corp. of Louisville, and PEI treasurer, reported on the financial condition of PEI, its annual budget, and membership. "We now have approximately 117 members," McBride said. "Our annual budget is $82,000. . . . Total current assets are $59,000, as against liabilities of less than one thousand dollars." McBride then explained expenditures, and how the money was used to better the condition of the porcelain enamel industry as a whole.

R. C. Myers, of U. S. Steel Corp. and PEI vice-president and chairman of Market Development Committee, explained the functions of the Market Development Committee in its attempts to focus consumer attention on porcelain enameled products. "Today, people must be told what to buy," Myers said. "But creating acceptance for a specific product in competition with similar products is very costly and usually beyond the scope of a single firm operating within an industry. This demands industry-wide cooperation in market development.

"However, the market development program in each plant should be well organized and have a definite goal to expedite the actions taken by a trade association for the betterment of the industry."

Myers said that during the past year, PEI publicity releases had resulted in more than 200 feet of column space in various magazines and newspapers. He demonstrated a new kit for use in department stores to illustrate to customers the durability and stain resistance of porcelain enamel to such common injurious substances as lipstick, lemon juice, onions, and burning matches.

"Familiar labels are important in convincing purchasers," Myers said. "Such labels are available through PEI at cost." *to Page 73* →

Speakers at morning session, March 20, during West Coast Conference of Porcelain Enamel Institute, left to right: H. H. Wineburgh, Texlite; Herbert Turk, Pemco; W. A. Barrows, Barrows Porcelain, and PEI president; J. T. Penton, California Metal Enameling; P. B. McBride, Porcelain Metals; R. A. Dadisman, Armco Steel; Edward Mackasek, PEI managing director; and R. C. Myers, U.S. Steel.

Refrigeration, air conditioning groups approve merger at annual meetings

George Jones to head new Airconditioning and Refrigeration Institute

A PROPOSED merger of the Refrigeration Equipment Manufacturers Association (REMA) and the Air Conditioning and Refrigeration Machinery Association (ACRMA) was approved by the boards of directors of both associations at meetings held in Hot Springs, Va., March 29.

George S. Jones, Jr., former vice president in charge of sales for Servel, Inc., will head the organization as managing director.

The new organization, to be known as the Airconditioning and Refrigeration Institute (ARI) will be set up as rapidly as the merger can be consummated and details can be worked out. Headquarters will be combined and remain in Washington.

In the meantime, *each association will maintain its own staff and continue "as is"*, with Jones directing their activities as soon as he has completed personal arrangements to take on the new assignment.

This assures the continuation of all activities now being carried on by each association with particular reference to the 8th All-Industry Refrigeration and Air Conditioning Exposition, to be held November 9-12, in Cleveland, Ohio.

GEORGE S. JONES, JR.

Official approval of the merger by the members of both associations is being sought by mail ballot.

The combined membership will exceed 150 firms, including practically all of the major companies in the industries.

Purpose of the merger

Many advantages are seen in the merging of REMA and ACRMA. According to the announcement, the purpose of the merger is:

1. To insure the continuance of the mechanical cooling industry as a prime industry entity.
2. To effect a cooperative interchange of commercial developments within the art of mechanical cooling for general industry progress.
3. To provide the means of employing prestige leadership and topflight associations with management.
4. To provide such service facilities as may be necessary and to acquire the strength and prestige with which to attract new elements entering the industry.
5. To reduce the time burden on member representatives assigned to the administration of association affairs.
6. To eliminate costly and unnecessary duplication of effort and expense.
7. To gain recognition as the official voice of the mechanical cooling industry in all its relationships with other trade associations, the government, the press, and the public.
8. To preserve a dues structure which will assure small companies a continuance of the benefits from basic service functions.

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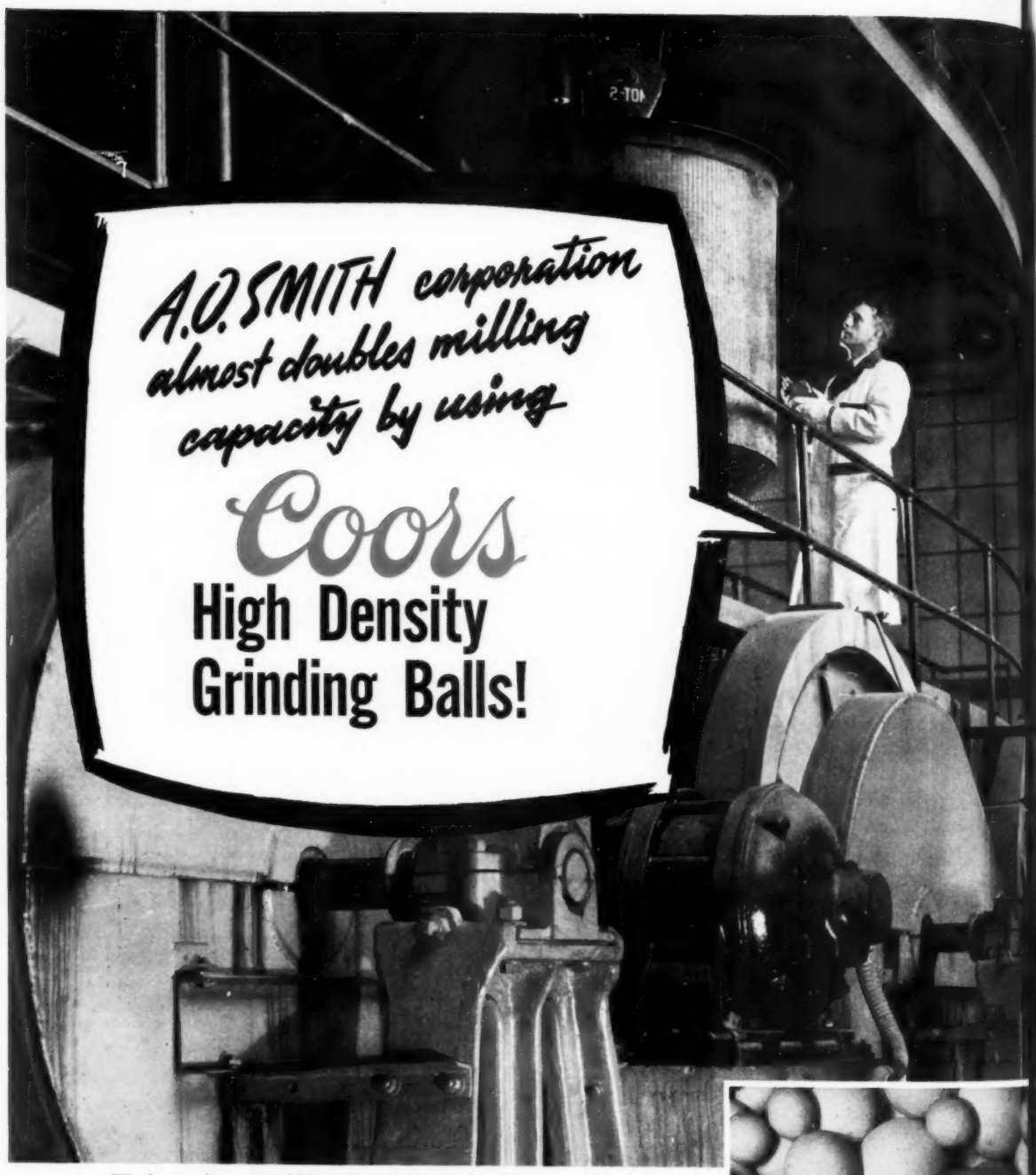
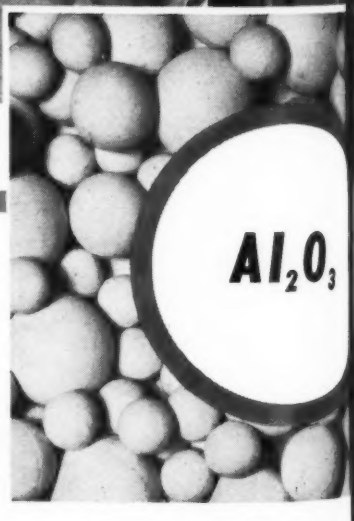
Newly-elected REMA officers, left to right: James Emmett, Jr., treasurer; L. C. McKesson, president; Lud Emde, vice president; Cecil Boling, secretary; and John E. Dube, retiring president.



Workmen charge a pebble mill at the A. O. Smith Corporation—where milling time was reduced 46%—from 5,800 revolutions to 3,100 by using Coors Alumina Ceramic Grinding Balls.



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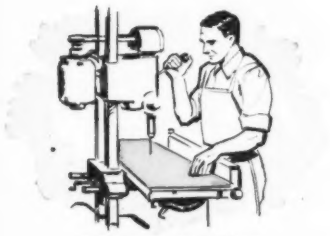

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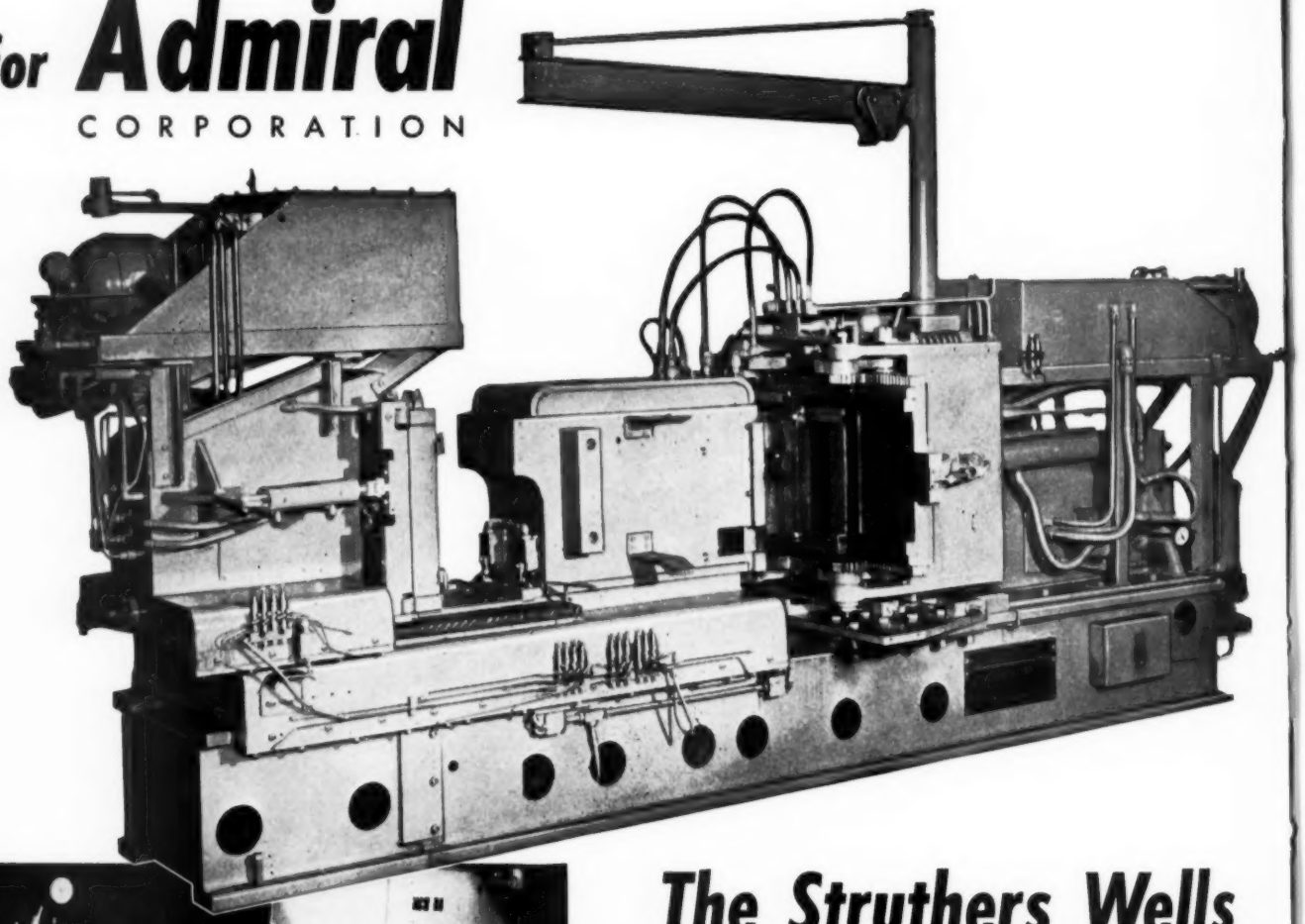

The Struthers Wells Tangent Bender at work in the Admiral plant. Auxiliary bender forms bottom in-bent flanges while cabinet is held in main dies—assuring proper side height, saving handling and re-location to other machine.

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Tool engineers meet in Detroit

place emphasis on a shortage of engineers in all phases of industrial production

MOST frequently heard comment at the 21st annual national meeting of the American Society of Tool Engineers, held in Detroit, March 18-20, was the repeated emphasis on the need for more engineers to serve all phases of industrial production — from research to the finished product.

More than 1500 production "know-how" experts from the United States and Canada attended the three-day meeting which heard the presentation of 22 technical papers which featured the automation of industrial methods and machines.

Industry short 95,000 engineers

Need for engineers was first voiced during the two-day leadership conference which preceded the national meeting. Kenneth Meade, General Motors education relations section head, told ASTE chapter chairmen assembled for the conference that the United States was 95,000 short of having enough engineers.

C. V. Briner, of Cleveland, Ohio, past national president of ASTE, said there was a need for industry to "scrape the clerical jobs" for engineers. In his speech, which concluded the conference, he said many excellent prospects for engineering careers were being wasted on routine clerical jobs. He exhorted the production experts to look around their own plants and see how many engineers they could find doing simple routine work.

Guided missile production

Brig. Gen. Thomas K. Vincent, commander of Redstone Arsenal, Huntsville, Ala., and head of the Army's guided missile and rocket research and development program, spoke at the concluding banquet of the national meeting.

In his address, Vincent stressed the need for more engineers in the guided missile research and development program as well as in the actual production program. He lauded tool engineers for "meeting the exacting demands of the designers" and said the program he heads would not be possible were it not for the efforts of tooling engineers.

Automation in industry

Automatic factories and practical application of automation in the factory were two topics featured in the technical papers which attracted considerable attention. Other papers told of new developments in metal stitching, bonding adhesives, wax lubricants in metal working, precision balancing, control of machine downtime, hard-coat surfacing and other new developments in engineering research and industrial production.

Self-serve hoppers

"Self-serve" adds up to savings on industrial machinery as well as in supermarkets or "automats", according to a talk by J. R. Paquin, tool engineering consultant, of Worcester, Mass.

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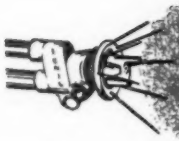
ASTE officers: Seated, left to right — Joseph P. Crosby, 1st vice pres.; Leslie B. Bellamy, past president and director; Roger F. Waindle, president; Dr. Harry B. Osborn, Jr., 2nd vice pres.; and Harold E. Collins, treasurer. Standing — Harry E. Conrad, executive secretary; Wayne Ewing, ass't. sec.-treas.; Thomas J. Donovan Jr., George A. Goodwin, W. B. McClellan, Gerald A. Rogers, Willis G. Ehrhardt, all directors; Raymond C. Peterson, secretary; Ben J. Hasenwinkel and Fred J. Schmitt, both directors; Howard C. McMillen, 3rd vice pres.; and Allan R. Putnam, ass't. exec. secretary.



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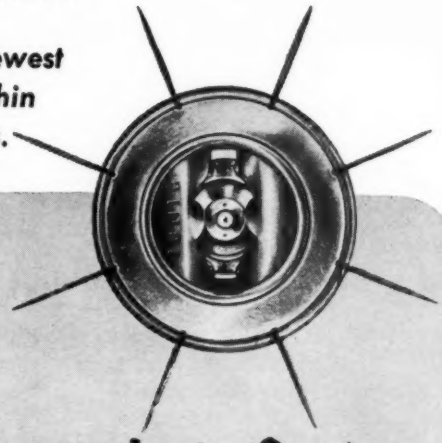

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Symposium on industrial finishes

short course on recent advances in organic finishes at Case Institute of Technology

(illustrated with finishfotos)

THE Case Institute of Technology, Cleveland, Ohio, was host to a capacity crowd of both manufacturers and users of industrial finishes, on March 30, 31 and April 1. The occasion was the Institute's second Symposium on Recent Advances in Industrial Finishes.

The program for the 1953 symposium complemented the more general review of the 1952 symposium by considering some of the more important details which would help qualify the decision of the coatings engineer in the selection and application of protective organic finishes. The announced purpose of the symposiums are to review the theory and practice of coatings engineering with respect to some critical problems of specification and application of organic finishes, and with particular reference to the special circumstances that result from recent efforts to evaluate and use the newer types of synthetic resin finishes.

This year's panel-type program was arranged in such a way to encourage the maximum of informal discussion by participants in the three-day meeting.

Metal protection in severely corrosive environments

The opening session was devoted to "*Metal Protection in Severely Corrosive Environments*" — with special reference to protection under conditions which result from exposure to high concentrations of chemicals, high temperature, underground environments, etc.

Chairman of this panel was E. G.

The photos on this page were taken during the industrial finishes symposium at Case Institute of Technology.

Panel on "Causes and Remedies of Paint Application Faults", left to right: S. J. O'Brien, Calco Chemical; J. C. Caldwell, Lacquer Products; C. H. Leopold, Ferbert-Schorndorfer; S. J. Huey, Sherwin-Williams; and Kenneth Tator, K. Tator Associates.

Bobalek, associate profesor of chemistry at the Case Institute of Technology.

Panel members and their coating topics included: W. R. Lawton, director of research and development, Permolite, Inc., Dayton (*phenolic*); R. W. Quarles, director, Bakelite Fellowship, The Mellon Institute, Pittsburgh (*vinyl*); H. Howard, technical service laboratory, Shell Chemical Corp. (*epoxy*); F. K. Shankweiler, manager, cellulose products sales, The Hercules Powder Co., Inc., Wilmington, Del. (*chlorinated rubber*); and R. Hedlund, Dow Coring Corp., Midland, Mich. (*silicone*). Other members of the panel were F. Honn, research department, M. W. Kellogg Co., Jersey City, N. J.; and G. W. Blum, assistant professor of chemical engineering, Case Institute.

Paint application problems

The second day was devoted to sessions on "*Special Problems of Paint Application.*"

The morning session was concerned with "*Factors which Influence the Adhesion of Organic Coatings.*" Chairman was D. M. Gans, director of research, The Arco Company, Cleveland.

Panel members included: A. J. Liebman, assistant director of research and development department, Dravo Corp., Pittsburgh; and E. G. Bobalek, of Case Institute.

The aftenoon session was concerned with "*Causes and Remedies of Paint Application Faults—Other than Adhesion.*" Panel chairman was C. H. Leopold, laboratory director, Ferbert-Schorndorfer Co., Cleveland.

Members of the panel included: Kenneth Tator, Kenneth Tator Associates, Corapolis, Pa.; S. J. O'Brien, senior chemist, Calco Chemical Division, American Cyanamid Corp., Bound Brook, N. J.; S. J. Huey, The Sherwin-Williams Co., Cleveland; and J. C. Caldwell, Lacquer Products, Inc., Cleveland.

Panel on "Factors Which Influence the Adhesion of Organic Coatings": A. J. Liebman, Dravo; D. M. Gans, Arco; and E. G. Bobalek, Case Institute.

Part of panel on "Metal Protection in Severely Corrosive Environments": R. Hedlund, Dow Corning; W. R. Lawton, Permolite; E. G. Bobalek, Case; H. Howard, Shell Chemical. This part of panel discussed thermosetting resins.

Testing of organic coatings

Sessions on the third day were devoted to "*Testing of Organic Coatings.*"

The morning program was given over to discussion of "*Design and Interpretation of Experiments for Field or Service Testing.*" Chairman was W. von Fisher, head, Department of Chemistry and Chemical Engineering, Case Institute.

Panel members included: F. J. Ploederl, Wisconsin Protective Coating Co., Green Bay, Wis.; C. T. Ellis, manager, paint and artificial leather research and development department, Ford Motor Co., Higland Park, Mich. W. D. McMaster, assistant head, research laboratories chemistry department, General Motors Corp., Detroit; A. R. Weibel, chemist, The Armstong Cork Co., Beaver Falls, Pa.; and L. F. Long, Jr., technical service director, The Glidden Company, Cleveland.

The panel for the closing session discussed "*Accelerated Laboratory Tests for Prediction of Service Properties of Coatings.*" Chairman of panel was C. F. Pickett, chief, paint and chemical laboratory, Aberdeen Proving Ground, Md.

Members of the panel included: S. Gusman, research laboratories, Rohm and Haas Co., Philadelphia; F. Reinhart, chief, organic plastics section, National Bureau of Standards, Washington, D. C.; L. E. Hoag, The Ameri-

Panel on "Design and Interpretation of Experiments for Field or Service Testing": W. D. McMaster, General Motors; C. T. Ellis, Ford Motor; A. R. Weibel, Armstrong Cork; F. J. Ploederl, Wisconsin Protective Coating; L. F. Long, Jr., Glidden; and Wm. von Fischer, Case Institute of Technology.

can Can Co., Maywood, Ill.; J. O. Small, sales supervisor, The Hercules Powder Co., Wilmington, Del.; and Francis Scofield, National Paint, Varnish and Lacquer Association, Washington, D. C.

Condensations of Symposium Papers

Some causes of color failure due to application

by S. J. HUEY, The Sherwin-Williams Co.

WE are now on the threshold of a new era, whereby color will be judged by instrumentation. We are beginning to discuss color in terms of numerical values and we can refer to it in the same manner as we do viscosity and gloss. Visual observation, however, will always be an important factor even with the advent of color measuring instruments.

Color failures can and do occur upon exposure or aging, as is apparent by chalking or fading. These types of failures can usually be corrected by formulation. Color failures that occur after application can be checked by accelerated testing methods.

Those color failures which appear immediately after application can be usually attributed to:

1. Improper standards
2. Misunderstanding of tolerances
3. Lighting conditions
4. Metameric pairs
5. Baking schedules
6. Application methods

Very often unsatisfactory color matches are made because proper standards are not given to the manufacturer.

From the paint shader's viewpoint the best standard for color would be a wet sample of the material itself. A wet sample has many advantages. It can be applied on the same size panel that the batch is applied on, or it can be applied to a section of the same panel. This is important as the viewing angle will always be the same for both batch and standard. With a wet standard, the batch and standard will always be applied in the same manner and by the same person. If it is a baking material, then the batch and standard will be both baked at the same time and temperature. Wet standards do have certain disadvantages in that the color may drift in the package with age. Also, if they are not readily replaced there might be a color change as the standard is used up.

Standard panels are satisfactory if they are of sufficient size and are reasonably permanent in color. They must be free of scratches and fingermarks.

Very rarely is there such a thing as a perfect color match. In view of this it becomes important that all parties concerned are agreeable on the tolerance that is to be allowed. The tolerance is, of course, governed by the end use of the material. We believe that neither supplier or buyer would expect the same close tolerance expected for automotive finishes as for shovel handles. On the other hand, any buyer has the right to demand any tolerance he wants to pay for. The paint manufacturer and buyer should agree on the color tolerance before the material is manufactured. The use of color measuring instruments can be very helpful for establishing color tolerances. When the correct tolerance is agreed upon, numerical values can be established, and from then on many problems, which arise from visual observation, will be eliminated.

You have heard the old joke about turn on the green light, the man wants a green suit. This old joke points out that when judging color the type of light under which an object is observed has a definite effect

Panel on "Accelerated Laboratory Test for Prediction of Service Properties of Coatings": S. Gusman, Rohm and Haas; F. Reinhart, National Bureau of Standards; Francis Scofield, National Paint, Varnish & Lacquer Assn.; C. F. Pickett, Aberdeen Proving Ground; L. E. Hoag, American Can; and J. C. Small, Hercules.

Among those attending the Case Symposium on industrial finishes were, left to right: Henry Essen, Perfection Stove; W. C. McMaster, General Motors; and T. G. Roskos, A. O. Smith.

on its color characteristic. From the paint manufacturer's standpoint, it is almost mandatory that a standard source of light be used in color matching if he is to have any degree of color control from batch to batch. To maintain a constant light source, he must use some form of artificial light as natural light cannot be controlled. It is at this point where trouble sometimes occurs. The paint as supplied to the user will be uniform from batch to batch for color, but when it is applied in the customer's factory it is not very likely to be viewed under the same light source.

When two painted objects are said to be metameric, it is meant that they will match under one light source and not another. This condition usually exists when different pigment combinations are used to get the same color of the two examples under observation. Much of this trouble would be eliminated if the supplier would submit a sample to the customer for approval. Then, by using the same pigments in the production as were used in the sample, the metameric conditions would not exist.

If the baking schedule set up is changed by either supplier or buyer then a color failure is likely to appear. Those things important in a baking schedule are time, temperature and atmosphere. If the material is baked at a shorter or longer time, it is natural to believe that the color will be different. The same goes for the temperature. At higher temperatures most materials tend to yellow. The type of atmosphere around the object being baked can affect the color. If the customer were using a foul gas oven and the supplier an electric oven, we assume that there would be less oxidation of the pigment in the foul gas oven due to the lack of oxygen. This would then affect the color.

Application methods have a great bearing on color and account for many color failures. This is true whether it be dip or spray.

Those things affecting color in spray application are evaporation rate of solvent, strength of the solvent, pressure and volume of air and distance to work. These things all control the rate at which the film sets up. Most paints have a slight tendency to flood, and any change which affects the setting up time of the film will affect the flooding — thus in the end affecting the color.

Many color failures in dip tank operations are due to stratification of the pigment within the dip tank. This can be overcome by agitation to some extent, but in the case of olive drab colors where ferrite yellow is used with carbon black the effects of gravity is a problem which must be overcome.

In large dip tanks there are certain areas where the circulation may not be adequate. In these areas a gradual settling out of the pigment occurs and a color change will soon be apparent.

There is also color difference on objects that are dipped, due to the manner in which they drain. This is more apparent if the paint has a tendency to flood.

Most of the problems that cause color failure can be eliminated to a large extent if the buyer would inform the supplier as soon as there is an apparent color drift and also tell him in what direction it is moving. The manufacturer could then check to see if a color change is taking place or if it is a matter of interpretation.

Causes and remedies of paint defects brought about by improper control of baking operations

by C. H. LEOPOLD, Ferbert-Schorndorfer Co.

THERE are a number of things which may cause defects in paint films during baking. Very often a vapor degreaser employing trichloroethylene is near a gas oven. Periodically the work coming out of the oven is flat and has a fine wrinkled surface. This is caused by the trichloroethylene vapors creeping across the floor, and when they come into contact with the gas burner they are decomposed. One of the products of this decomposition is hydrochloric acid. This material acts as a catalyst for amine resins, so that if the product being baked in the oven contains one of them, the catalytic effect of the acid produces a flat and wrinkled surface. So far as I know, there is no material, which when added to the enamel, will completely cure this condition. However, if fresh air from the outside is piped thru ducts directly to the burner, so that no trichloroethylene vapors can be decomposed with the burning of the gas, this phenomenon of wrinkling with amine resins can be completely eliminated.

Color drift, under-cured and over-cured films, loss of gloss, pinholing, hazing and many other troubles are often due to improper temperature control, and poor ventilation in ovens. In many instances, the thermocouple is placed at the point where the peak heat is attained and does not give the true temperature of the baking cycle. A very good practice to follow is, at least once a week, to check your ovens by means of a traveling recording thermometer, which will give the complete temperature and time cycle, and will enable you to check the permanent controls on the oven.

Very often work will come out of the oven, on which one part is hard and another part is soft, or a portion of the paint film has the appearance of solvent wash. This may be caused by loading the oven with too much metal, or metal packed too closely, so that the solvent vapors

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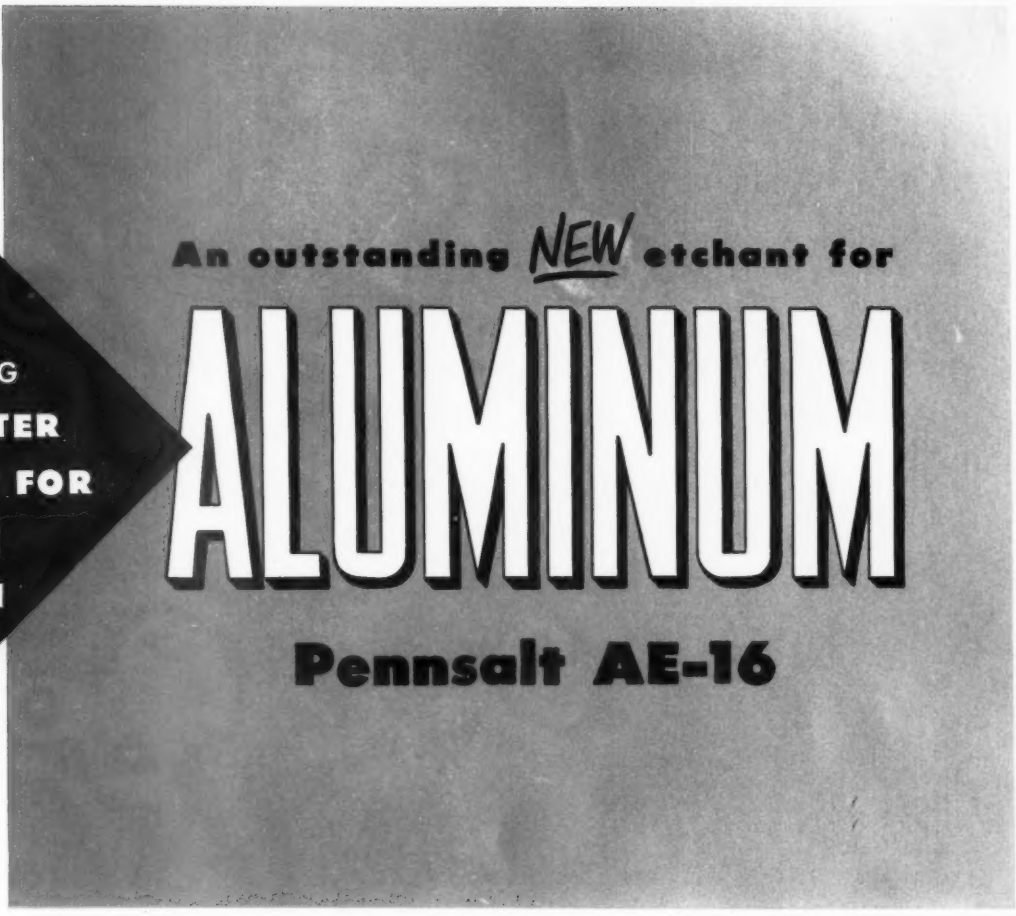

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non-sludging • non-scaling • long-lived • time-saving • money-saving

Good news for fabricators! With Pennsalt's great new etchant—AE-16—you can give aluminum a beautiful satin finish *without* experiencing the usual headaches of sludge and scale—and at considerable lower cost than with *any* equivalent product!

Here's a case in point: A leading aluminum fabricator ran a side-by-side production test with AE-16 and an old-style etchant. After *nine weeks*, the original tankful of AE-16 had formed no sludge, was still performing satisfactorily! The old-style etchant had to be dumped and recharged twice in the same period.

Of course, AE-16's non-scaling characteristic means reduced tank maintenance costs, also. The AE-16 tank was cleaned by merely flushing it down with a hose—no chipping, no shoveling of rock-like scale.

AE-16 is a *quality* etchant In from one-half to ten minutes at normal tank temperatures, it produces a smooth, even, satin surface that easily conceals die marks and surface flaws. Few additions are required to keep up its working strength, and you'll find Pennsalt's method for determining the concentration exceptionally easy to follow.

All this means less down time, trouble-free operation, lower maintenance costs, increased production. Yet, even with its many advantages, *AE-16 actually costs less* than any comparable product on the market!

AE-16 is part of a complete aluminum preparation "package" Pennsalt now offers to fabricators. To help you use these excellent materials with maximum efficiency, Pennsalt also offers a Metal Processing Service, staffed by specialists in this field.

Further information—on AE-16 or on any of the other products in the Pennsalt "package"—is yours for the writing. Address: Metal Processing Service, Pennsylvania Salt Manufacturing Company, *East:* 288 Widener Building, Philadelphia 7, Pa. *West:* 2168 Shattuck Ave., Berkeley 4, Calif.

The Pennsalt Aluminum "Package"

Pennsalt Cleaner A-27: A new all-purpose non-etching cleaner that thoroughly removes all tough soils, including red and black marking inks. Rinses quickly and completely, even when allowed to dry on the work. Will not streak or stain.

Pennsalt Aldox*: A new powdered, acid-type desmutter and deoxidizer. Replaces nitric acid, does away with carboys and fumes.

Pennsalt Cleaner #85: An alkaline cleaner and deoxidizing agent recommended when aluminum is coated with a heavy layer of oil.

Pennsalt Cleaner MC-1®: An unusually economical general-purpose deoxidizing-type cleaner.

Pennsalt Cleaner EC-51*: A non-staining, organic-type emulsion cleaner.

Pennsalt Cleaner EC-54*: An emulsion cleaner which will not boil off, evaporate, or flash at use temperatures.

*Trade Name of PSM Co.

Pennsalt Chemicals

Problem...

GETTING GREATER FLEXIBILITY, MAXIMUM UTILIZATION OF SCARCE STEEL WITH SMALLER INVENTORIES ....

Industrial building corridor shows the variety of panel widths required. Note ripple-free flatness of panels. Hauserman can cut these from one width of coil stock.

Neat, trim business office of Hauserman panels. Note clean window lines and wainscoting. Hauserman now can produce any necessary width from wide coils, eliminating heavy steel inventories.

The E. F. Hauserman Company, Cleveland, Ohio, is the world's largest manufacturer of movable steel partitions and wainscot panels. Their operation demanded flat steel of innumerable dimensions, trimmed and leveled to precision flatness. As the sheets came from the steel mills they were stretcher leveled to commercial tolerances, or a buckle of not over ¼" high. But in the manufacturing of Hauserman partitions, they insisted on the maximum tolerance of 1/16", or practically dead flat.

The steel mills had met Hauserman's flatness requirements, but it was costly for them as well as Hauserman. Steel producers encouraged Hauserman to look into the possibilities of providing their own leveling facilities. Add to this the fact that Hauserman's operations required sheets of many sizes in lengths from 3 to 12 feet and widths from 1 to 5 feet. In using mill sheets Hauserman had either to stockpile multiple lengths and widths to obtain a flexible inventory or to stock larger sized sheets and trim them as they were needed — which resulted in unnecessary waste.

Solution...

WEAN COMBINED SLITTING, SHEARING AND LEVELING SET-UP FOR MANUFACTURING PLANTS PROVIDES THE ANSWERS....

Receiving end of Wean shear line shows compact, easily maintained arrangement. Elevated control stand permits full view of all operations.

Precision leveling and accurate shearing with effortless ease. Note slitting attachment (left foreground) that can be easily engaged for the production of narrow strip.

Encouraged by basic steel producers Hauserman engineers decided to do their own slitting, shearing and leveling. Working with Wean Equipment Corporation's engineers a complete operation was designed and built that enables Hauserman to buy commercial coil stock in a minimum of widths, shear to desired dimensions, level as required — to maintain complete stocks with a minimum inventory.

The first station on the Wean line is an uncoiler from which the stock passes into a gang slitter where it is edge trimmed and slit to desired widths. The steel may then be recoiled and stored. When sheets are desired, the stock by-passes the recoiler and enters the flying shear to be cut in sheet lengths. Semi-automatic roller conveyors enable Hauserman to move the steel to storage or to send it through the leveling section of the line where the roller leveler actually delivers improved flatness over the stretcher leveled stock formerly used.

THE ANSWER IS RESULTS . . .

Wean maintains perhaps the most experienced staff of special machinery and equipment engineers and construction craftsmen in the nation.

Whatever your special machinery problem, your engineers can have this result-getting combination by contacting Wean Equipment Corp., 22800 Lakeland Boulevard, Cleveland, Ohio.

MACHINERY TODAY IS THE BUSINESS OF THE

EQUIPMENT CORPORATION

Wean

Detroit, Michigan
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Newark, New Jersey

Cable: Weancor **Cleveland, Ohio**

ASTE → *from Page 43*

Paquin described "self-serve" feed hoppers for automatic selection and delivering of parts to machine tools for further processing. The hoppers convert "slow, hand fed machines into highly productive, fully automatic machines", Paquin said. Soaring labor costs, he added, have increased industry's desire for automatic machines.

Various designs of hoppers, including paddle wheel and rotary models, have been designed to meet the varied needs of today's modern machine and metal working shops, he stated. The machines help themselves automatically to blank parts for processing as finished parts are automatically ejected, he said. Expert engineering can provide self-serve mechanisms no matter how complicated the parts, Paquin said.

Wax lubricants

"Wax" is in the dictionary but the hundreds of words defining it don't tell the story, according to James B. Carse, industrial products sales manager, S. C. Johnson & Son, Inc., Racine, Wisconsin.

Carse told the production experts "The right wax is a lubricator, a reducer of fiction, with exceptional properties in the fields of temperature, pressure and adhesiveness. It is not a panacea".

During the talk he displayed for the first time charts showing results of a series of tests made by the University of Michigan Engineering Research Institute to explore the basic functions and principles of metal working lubricants as related to the entire subject of waxes.

Contour forming problems

'Necking' is dangerous, according to Dr. George Sachs, director of metallurgical research, Syracuse University, of Syracuse, N. Y.

However, Dr. Sachs was not referring to the same type of necking psychologists refer to in their admonitions. He had reference to the danger of necking and subsequent breaking of narrow metal sections which are formed to shape in manufacturing plants by bending.

Dr. Sachs said the behavior of the narrow sections during bending is a decisive factor in arriving at the forming limit of many contour-formed parts. The narrower the section, he added, the greater the danger of necking and subsequent breakage.

The Syracuse research expert advised a systematic investigation of the variables involved in contour-forming or bending of metal parts to supply satisfactory design data for industry.

Metal spinning

Despite all the industrial advances of recent years, the centuries old process of spinning is playing an important part in today's vast metal working field, stated John W. Lengbridge, project engineer, Aluminum Goods, Inc., of Toronto.

The Canadian engineer evaluated spinning in comparison to drawing of metals. He said the process which is thought of primarily in connection with pottery or working with clay is a valuable asset in metal working.

Although drawing of metals, a modern industrial development, is normally more applicable for many of today's processes, he said, spinning had proven to be more economical in the manufacture of small quantity items in many cases, and was a valuable supplement to drawing in the manufacture of metal parts.

Metal-wood bonding

Metal furniture with the appearance of wood which will not be marred by a cigarette no matter how long the lighted end remains in contact was forecast by O. W. Loudenslager, manager of research and development, Goodyear Aircraft Corp., Akron, Ohio.

Loudenslager said tests have proved such furniture pactical by bonding a thin ply of the desired wood onto the metal with a special adhesive material. He predicted this product development as one more outgrowth of the aircraft industry's work in developing lightweight bonded structures.

Cost reductions from future research and development will see the metal-to-metal bonding process speading throughout all industry including the manufacture of walls, floors, sink tops, doors and partitions, he said.

Metal stitching

Metal stitching has resulted in enormous savings for industry, reported Arthur G. Denne, manager, round stitching wire dept., Acme Steel Products Division, Acme Steel Company, Chicago.

Denne said the first metal stitching machine was developed in 1938 as a result in the change of construction of automobile bodies. In 1941, he added, stitching machines were first used experimentally in aircraft production. Tests have shown stitched parts taken from aircraft used in both arctic and tropical regions successfully resisted both corrosion and vibration.

Included in his case histories was the story of how metal stitching made possible the re-design of one line of industrial floor sweepers. The sweepers originally had wood backs for brushes which necessitated manual assembly and held production to enough brushes for 40 sweepers per day. By use of metal stitching, the

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New ASTE Officers

New officers elected during the Society's annual meeting include:

President, Roger F. Waindle, vice president, Cannon-Muskegon Corp., Muskegon, Mich.

1st Vice Pres., Joseph P. Crosby, vice president, The LaPointe Machine Tool Co., Hudson, Mass.

2nd Vice Pres., Dr. Harry B. Osborn, Jr., technical director, Tocco Division, The Ohio Crankshaft Co., Cleveland.

3rd Vice Pres., Howard C. McMillen, general manager, Philco Corporation, Bedford, Ind.

Treasurer, Harold E. Collins, manager, process engineering dept., Hughes Tool Co., Houston.

Secretary, Raymond C. Peterson, owner, Peterson Engineering Co., Toledo, Ohio.

Ass't Sec-Treas., Wayne Ewing, partner, Arrowsmith Tool & Die Co., Los Angeles.

PLANTS that learned about Century time-proved frits during the past six months have more "dollars in their pockets" today as a result. Customers who have used Century enamels year after year can show a nice fat saving in enamel plant operating costs—that's why they continue to use them year after year.

Sure, they are priced right to start, but there are "in plant" savings that count up fast. Century ground coat enamels give the grip, the durability so important to your product, and they are easy and economical to apply. Century cover coats produce the finishes you can sell with confidence and produce them without extra fuss or special handling in the plant.

Make a note to arrange for a trial of Century frits before another month rolls by. Then, by the end of this year you will agree with us that Century frits "put dollars in your pockets."

FRIT from
CENTURY
FRIT MASTERS

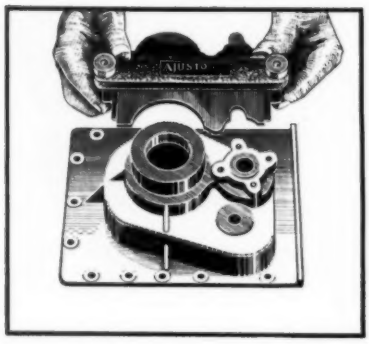
CENTURY VITREOUS ENAMEL COMPANY

• 6641-61 S. Narragansett Ave., Chicago 38, Ill. •

New Supplies and Equipment

E-10. Adjustable profile template

New Both a male and female profile are obtained in a matter of seconds with this new Adjusto profile template. Hours of painstaking template-making are eliminated. The Adjusto unit is composed of a number of hard brass strips, each one only .007 inch thick. This permits close adjustment to practically any profile, yet provides extremely close tolerances.



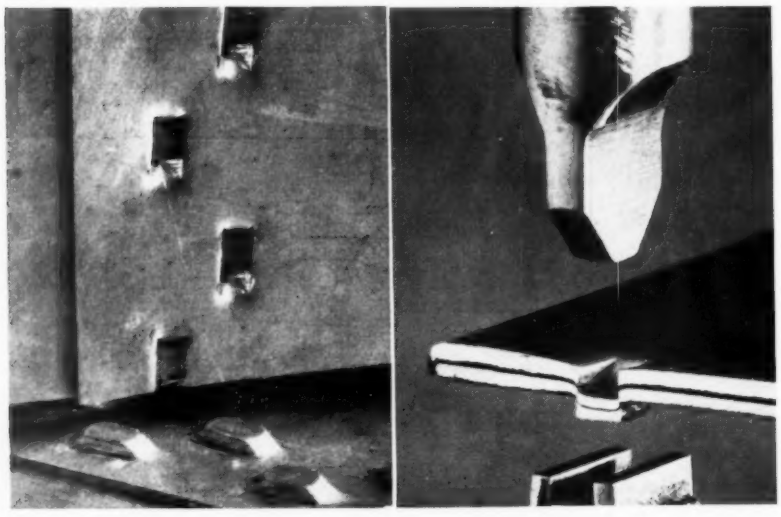
The laminations are held in position by two specially constructed clamps, secured by two thumb-screws and springs, by the tension of which the laminations are firmly held, and adapt themselves to the exact shape of whatever medium the instrument is pressed against.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

E-11. One-step method of "Metalacing" sheet assemblies

New A new one-step method of fastening metal to metal, known as "Metalacing", literally buttons metal to metal. Descending action of the punch creates a parallel double incision in the sheets being fastened. Metal between incisions is pushed downward, against the anvil of the die beneath the sheets and between the die's yieldable jaws. There the force of the impact spreads the depressed metal laterally, making it form a permanent fastening wedge or button under the surface of the bottom sheet.



Material shown in photo on right is stainless steel, only 1/32" thick. Dark line between sheets is brown paper, inserted to visually separate the two pieces of metal.

The process is reportedly being used by several West Coast producers of appliances and metal stampings.

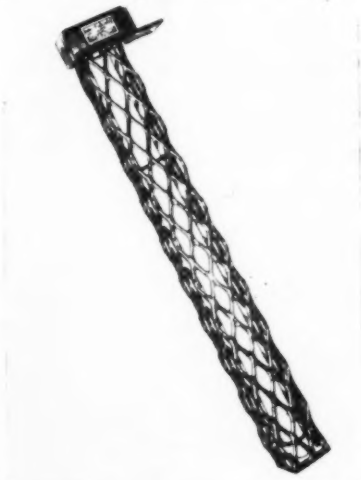
E-12. New 25-ton punch press has electronic control feature

New One of the foremost features of the new "DASHapress" is a central electronic control system which literally "thinks" for itself. The electronic brain provides both a central cycling and timing mechanism for the machine, as well as a dual safety control. It is said to be the first system of its type which provides instant stoppage of the machine if the safety device should fail.

This 25-ton capacity press is designed with platen areas 21¾" x 9"¾ which permit diversification of application. Material can be fed into the machine from any of the four sides in strip or cut form.

E-13. Radiant immersion heater

New The introduction of a new "Glo-Quartz" electric radiant immersion heater is said to make possible the heating of all pickling, phosphatizing, acid electroplating, and electropolishing solutions with 100% efficiency.



The fused quartz is said to be resistant to all acids at all concentrations and temperatures, with the exception of hydrofluoric acid. Also, the smooth surface of the quartz sheath, together with far-infra-red radiation, makes the unit suited for heating phosphatizing solutions since no deposits can form on the heating element's surface.

E-14. Loadstar trolley conveyor

New Nearly five years in development, this new "4" Loadstar trolley conveyor is ideal for all general trolley work where precision, high quality equipment is indicated. The wheel is made with steel or felt seals with inner and outer races hardened. The balls are of chrome steel and retained in a pressed steel cage. Outer ball races are ground. Hooks, trays, or any type of load carrier can be applied to the unit.

E-15. New immersion heater for alkaline solutions

New According to the manufacturer, this Clepco-Gorod Series W immersion heater is conservatively designed for safe operating temperature of the nickel alloy resistance element which is covered by a quartz body. Low heat density protects both heater and liquids from damage due to carbonization or "frying."

Units are portable; a single unit can serve many tanks and be quickly mounted over the side of the tank, or as in the case of vapor degreasers, screwed into two-inch threaded holes in the bottom of tanks.

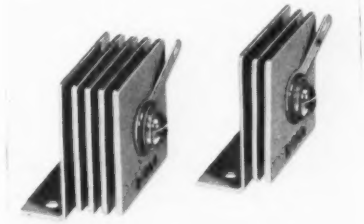
E-16. Stainless steel coating type of finish in various colors

New A new line of products now available under the trade name "Steelast" has come out of research work on stainless steel coating. The formula for Steelast products is basically the same as that of stainless steel coating in that both use a vinyl plastic vehicle, the primary difference being that a change of pigment makes possible the manufacture of all colors, including: black, white, gray, ivory, green, red orange and yellow.

Steelast can be sprayed, brushed, or dipped. It will withstand constant wet heat up to 180° F., and constant dry heat up to 300° F. Dries to handle in 30-60 minutes after spraying; 2-3 hours for recoating. May be force dried in 10 minutes.

E-18. Selenium regulators for use with low d.c. voltages

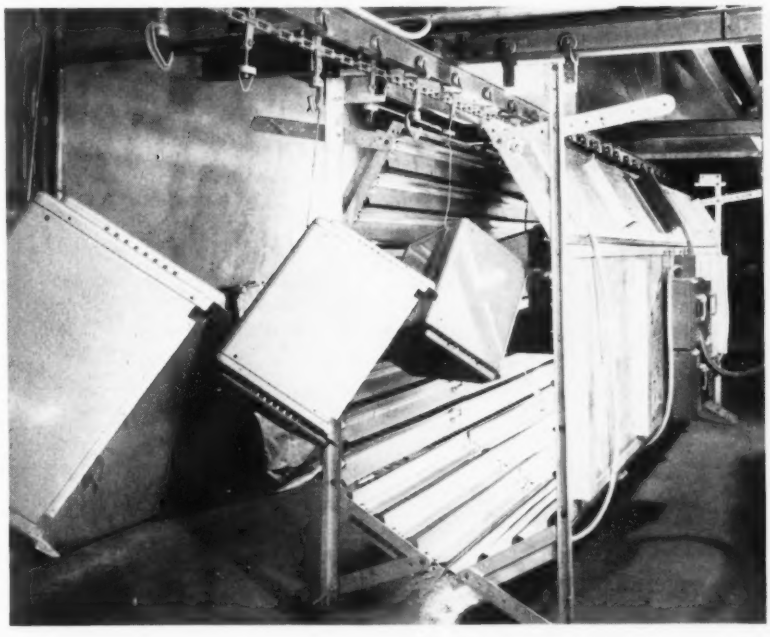
New A new series of selenium units are recommended for the regulation of relatively low d.c. voltages. For example, one selenium unit is recommended for the regulation of voltages in the order of 1.5 volts.



For operation, the selenium regulator is connected in shunt with the load. A voltage dropping resistor is connected in series with the source voltage and the load. Regulation is accomplished by utilizing the forward characteristic. The voltage across the voltage dropping resistor varies inversely with changing load current.

E-17. Radiant heater for drying, baking, curing operations

New This new Merco infra-red heating and drying equipment features a heat ray tube which develops an even temperature over ware being processed, eliminating so-called "hot spots." Because it con-



tains no gas and operates at atmospheric pressure, it cannot explode, reducing fire hazards. Operating costs are lower because the power consumed is transformed into heat, not light. The tube emits merely a faint glow when in operation — an important feature in applications involving colors which are light-sensitive.

The accompaying photo shows a Merco unit used for baking a hammertone finish on metal assemblies at Precision Sheet Metal Co., Inglewood, Calif.

Industrial literature

501. Pneumatic tools catalog

New This new catalog contains detailed specifications on Mall pneumatic tools. Included is information on grinders, drills, polishers, sanders, screwdrivers, circular and chain saws, socket wrenches, balance reels—nine tools comprising 35 models, plus attachments.

502. Case histories on benefits of "controlled heat" in appliances

New This two-color, 16-page booklet on the application of "controlled heat" contains a number of case histories on how Therm-a-neering has helped manufacturers of various types of electrical appliances solve heat and heat control problems.

Included are case histories of manufacturers of dishwashers, water heaters, hot plates, roasters, ironers, hand irons. Also included is a compact check list of thermostats used in the case histories.

503. Bulletin on gas burner tips

New A new bulletin gives details and specifications on standard Alco burner tips. Includes data on gas burner tips, radiant burner heads, carbon black tips, pilot tips, spuds, caps, removable discs and rings. The manufacturer also specializes in making burner tips and heads to any design.

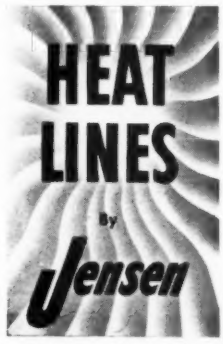
504. "Industry Ideas" publication

New A new monthly booklet, called "Industry Ideas", is devoted to business and industrial improvement. It is designed to give in quick, concise and brief form, valuable ideas to executives and operating men in business and industry.

Chief topics covered in this first issue include: "Eliminate Hand Holding," "Effecting More Efficient Paper Work," "Simplified Material Handling," and "Setting up an Effective Preventive Maintenance Program."

505. Publication on technical data and tips on process heating

New This brand new bi-monthly publication of technical data and tips on process heating is designed to help men engaged in production planning and maintenance —where process heating is a factor. Typical installations in major manufacturing plants are featured in each issue. Special heating problems of these manufacturers — and how they were solved — are described and illustrated. Other factual reports and features round out the publication.



506. Organic chemicals catalog

New Generously illustrated, this new "Organic Chemicals" catalog devotes almost 100 pages to the properties, specifications, and applications of Shell solvents, industrial chemicals, resins and plastics.

507. "Standardized Buildings" brochure

New Management interested in expansion of present plant or storage facilities will be interested in this new 20-page brochure entitled "Standardized Buildings by Luria", available to executives requesting it on company stationery. Abundantly illustrated, the publication details the advantages of standardized construction as practiced by a leading designer, fabricator and constructor of standardized steel-frame structures.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ **No.**_____ **No.**_____ **No.**_____

No._____ **No.**_____ **No.**_____ **No.**_____

Name _____ **Title** _____

Company _____

Company Address _____

City _____ **Zone**____ **State** _____

ADS OUT

Edison Electric Institute conference

salesmen must double load in ten years to keep up with power expansion

ADDRESSING the 19th annual sales conference of the Edison Electric Institute, B. L. England, EEI president, asserted that salesmen of appliances and power-using equipment must double the industry's electric load.

At the conference, held in Chicago's Edgewater Beach Hotel, March 31 through April 1, England pointed out that in just one decade, from the end of 1945 to the end of 1955, the electric utility industry will have more than doubled its generating capacity, from 50 million kilowatts to about 115 million.

England stated that "At the rate we're advancing today, we can positively expect that only ten years hence we will have achieved in new power supply facilities, the equivalent of all that provides electric service now, after some seventy years of development.

Big job for salesmen

"What does this mean to the salesman, who is responsible for building the revenue which makes it possible for engineering and financial people to provide the new plant and equipment? It means that he has the biggest job of all. Barring drastic changes on the national scene brought on by war or unusual economic conditions, he must double our electric load, which amounts to doubling our industry's business.

"By 1963, on a per-customer basis, the average annual residential use should reach 5000 kilowatthours, average commercial use about 20,000 kwhrs, and farm use 7200 kwhrs.

"Translate these statistics into the vast quantities of refrigerators, TV sets, electric ranges, lighting layouts, electric furnaces, milking machines, and other appliances and applications —which must be sold to bring about such a doubling of load—and you get an idea of the immensity of the job ahead."

Factors aiding the task

Continuing, England pointed out two principal factors which will aid in the task:

"First, appliances and electrical applications generally have never before existed in such variety and quantity as they do now.

"Second, the nation is at an exceptional level of prosperity. Full employment, healthy savings bank accounts, and high business activity all point to the fact that customers have plenty of money to invest in electrical ways of living and doing things."

Looking into the future, England said: "We can, by logically extending the scope of our services already being rendered and immediately in prospect, foretell that the farm using 50,000 kilowatthour annually, nearly 18 times the present average, will become commonplace; that electrically-operated automatic factories will be able to perform production miracles; and that homes with all-electric kitchens, color television, and year-round climate control, will be using 25,000 kilowatthours annually, about 12 times today's average."

No new round of inflation on immediate horizon

Martin R. Gainsbrugh, chief economist, National Industrial Conference Board, told the EEI conference that "no new round of inflation now seems to be on the horizon."

He asserted that "private business has regained the balance it lost in early 1951, and is in far better shape to withstand the test that might be imposed by diminishing defense expenditures." *to Page 71* →

Dwight R. Anneaux, Hotpoint utility section manager, presents the George A. Hughes award for outstanding achievement in the promotion of electric dishwashers in 1952 in the over 150,000 meters classification to John J. Gorman, of Philadelphia Electric, while Harry Restofski, EEI prize awards committee chairman, looks on.

THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

PERFECTION HITS SALES PEAK

Perfection Stove Company, Cleveland, reports that its 1952 sales reached an all-time high of $30,260,720, an increase of a little over 3¾ million over the 1951 total.

DEMUTH NAMED SERVEL PLANT ENGINEER HEAD

Woodrow W. DeMuth has been named superintendent of plant engineering at Servel, Inc., according to announcement by Jack A. Scarlett, manager of manufacturing engineering. For the past eight years DeMuth has been in charge of plant layout at Frigidaire's Plant No. 2, Dayton, Ohio. Earlier positions were with Hoover Co., Lockheed Aircraft Co., and Western Electric Co.

CROSLEY PRODUCTION PERSONNEL CHANGES

Crosley Division, Avco Mfg Corp., has announced a realignment of production executive responsibilities though John W. Craig, Avco vice president and Crosley general manager.

John Mihalic, Jr., formerly chief industrial engineer of the division's Nashville plant, will be works manager of the Richmond, Indiana, plant.

Robert W. Duncan, formerly Richmond works manager, becomes assistant to the general works manager in Crosley's headquarters, Cincinnati.

L. E. Hart, formerly industrial engineering supervisor, succeeds Mihalic as chief industrial engineer of the Nashville plant.

The Richmond plant, largest of Crosley's seven plants, produces refrigerators while the Nashville plant manufactures freezers, electric ranges, and airframe components for jet aircraft.

MAYTAG NAMES SMITH V. P. OF RESEARCH & DEVELOP.

Tom R. Smith, director of research and development for The Maytag Co., Newton, Iowa, since 1938, has been named vice president in charge of research and development, a newly-created office. Smith worked his way up through the ranks, starting as a machine operator with Maytag in 1933. The research and development division is currently being expanded to double the capacity of the division.

DOEHLER GETS MAJOR DEFENSE CONTRACTS

Doehler Metal Furniture Co., Inc., with offices in New York and manufacturing facilities in Plainfield, Conn., has been awarded major Government Armed Services contracts in excess of four million dollars. Contracts are for fiber glass products, a new development of the company, which has and is continuing to fabricate a variety of products of wood and metal. The company has allocated 100,000 sq. ft. of its 500,000 sq. ft. of manufactuing space to the new project.

NEW GAMA MEMBERS

The gas water heater division of the Gas Appliance Manufacturers Association has added two new members: The Luxra Company, Atchison, Kansas, and Michigan Tank and Heater Corp., Dearborn, Mich.

The Association also announced two other new members, and indicated that they will apply for division memberships at a later date. They are Quick Charge, Inc., Oklahoma City, Okla., manufacturers of steam cleaners and hot water heaters, and The Sheet Metal Manufacturing Co., Youngstown, Ohio. The latter company plans to make cast iron gas furnaces.

ASHLEY TO MANAGE G-E APPLIANCE LAB.

Samuel E. Q. Ashley has been appointed manager of the General Electric Major Appliance Division laboratory at Louisville. He will be in charge of the new laboratory to be built at "Appliance Park," and will direct applied materials and process research in the fields of chemistry, metallurgy, electricity, and mechanics. He has been with G-E since 1934.

INGERSOLL PRODUCTS PERSONNEL CHANGES

Top executive staff of the Ingersoll Production Division of Borg-Warner Corp., has been reorganized, according to announcement by R. S. Ingersoll, president of the division.

R. A. Anderson, previously vice president and Kalamazoo works manager, was named vice president-sales, in charge of all divisional and defense sales outside the farm equipment field.

W. Keith Eaton, executive of the Ingersoll organization, will remain a vice president in charge of agricultural sales for the division.

W. W. Kovalick, formerly production manager, has been made works

manager of the division's Chicago plant. J. A. White, vice president and works manager of the Chicago plant, has resigned.

J. H. Ingersoll has been appointed vice president and works manager of the Kalamazoo plants. He was formerly a vice president in charge of contract and defense sales.

R. F. Schutz has been appointed assistant works manager at Kalamazoo, and will retain his position as assistant treasurer of the division.

KAWELL APPOINTED CORY DIRECTOR OF PLANNING

Russell A. Kawell was recently appointed director of production planning of the Cory Division of Cory Corp., Chicago manufacturer of appliances, housewares and advertising specialties. Kawell joined Cory in 1939 as a production supervisor. Formerly assistant to the director of planning, Kawell is now in complete charge of the requisitioning and expediting of materials on order, and of inventory control.

IRON FIREMAN ENTERS COOLING FIELD

Iron Fireman Manufacturing Co., Cleveland, has announced its entry into the central cooling unit field, according to R. C. Wright, manager, research and development engineering. The unit is designed for easy access to all its elements, and any part can be serviced on the job without removing the entire unit.

WESTINGHOUSE NAMES TWO TO MERCHANDISING POSTS

Appointments of Frank A. Lowery as merchandise manager of dishwashers and food waste disposers, and W. M. Sayer as merchandise manager of water heaters for Westinghouse Appliance Div., Mansfield, have been announced.

Lowery will be responsible for the development and promotion of dishwasher and food waste disposer sales, and Sayre will have similar responsibilities for water heaters. They will report to W. R. Arbuckle, manager of the water heater and kitchen utilities department.

TEMCO PRODUCING COOL CABINET SPACE HEATER

Temco, Inc. is now producing cool cabinet space heaters of an unusual design, it was announced by W. Bratten Evans, president.

Through the use of a series of metal plates, which curve eccentrically behind the burner and radiants, the heater is said to create a rapid circulation pattern of heated and cold air through it. It is made in three sizes: namely, 19,000, 29,000 and 39,000 Btu input models.

PHILCO PLANS NEW CANADIAN PLANT

Philco Corporation has announced plans for a new plant to manufacture television and radio receiving sets in the suburbs of Toronto.

According to Sydney L. Capell, president, Philco International Corp., the manufacturing facility will be erected this year within the planned community of Don Mills. Production and administrative activities now conducted in the plant in Toronto will be transferred to the new site early in 1954.

When complete, the new plant will have 81,000 square feet of floor space, of which 60,000 will be devoted to manufacturing operations. The balance will be for offices, engineering, cafeterias and other administrative activities.

The new plant will be operated by Philco Corporation of Canada Limited, a subsidiary of Philco Corp., Philadelphia.

43% INCREASE IN GAS-FIRED FURNACE SHIPMENTS IN FEBRUARY

Gas-operated furnace shipments totaled 34,500 units during February — a gain of 43.8% over the corresponding month in 1952, according to GAMA. Shipments for the first two months reached 69,700 units, a 44.3% increase over the first two months of last year.

LAUNDRY EQUIPMENT PRODUCTION SURGES UPWARD

Factory sales of standard-size household washers in February reached 326,604 units, 27.6 per cent ahead of corresponding month in '52.

Automatic tumbler dryers sold in February aggregated 57,136 units, 28.3 per cent ahead of February '52.

Ironer sales amounted to 22,586 units in February, 28.1 per cent ahead of the preceding year.

VACUUM CLEANER SALES AHEAD OF 1952

Factory sales of standard size household vacuum cleaners totalled 246,007 units for February, 4.3 per cent greater than for the corresponding month in 1952.

QUICFREZ SOUND-SLIDE SALES TRAINING FILM

Quicfrez, Inc., will present "The Quicfrez Story", a new sound-slide sales training film, in full color, to dealers and retail sales personnel. The 15-minute film traces the company's growth and achievement, and presents its 1953 refrigerator line. Information is said to be presented in such a way that the salesman can incorporate it into his own sales presentation to customers.

REPUBLIC STEEL KITCHENS EXPANDS SALES PROGRAM

Following completion of an intensive sales training program at the Canton, Ohio, plant of Republic Steel

IF IT'S A DRAW *You Lose!*

If you run into trouble in your porcelain enameling department . . . rejects and reworks too high . . . a "Draw" won't solve your problem. If the enameling superintendent blames it on the frit . . . and the ceramic engineer blames it on the plant . . . even though it appears to be a draw . . . YOU LOSE!

WE DON'T HAVE "DRAWS" AT ING-RICH

In our laboratories a staff of highly competent ceramic engineers working constantly at the job of scientifically producing new frits, improving present formulae and running continuous exhaustive laboratory tests, must also work hand in hand with the production staff of our own large enameling plant. You just can't beat this unique combination of scientific research and "old man practical experience" all under the same roof.

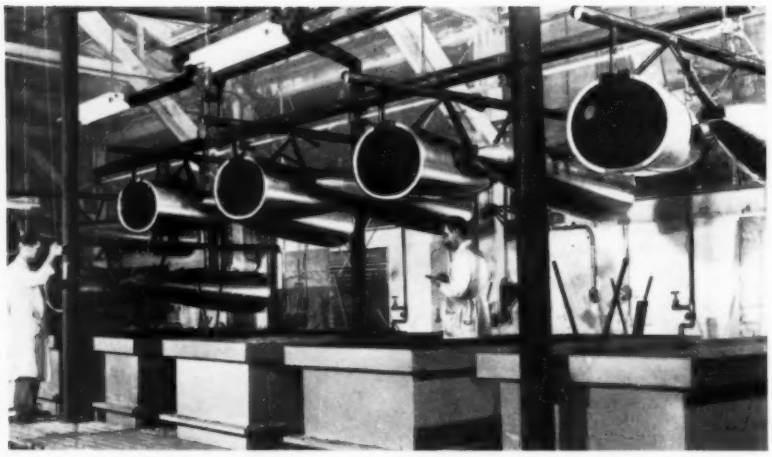
INGRAM-RICHARDSON, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

These men must work together day in and day out in the same plant. Passing the buck . . . draws . . . are impossible. That's why rejects and reworks have been reduced to an almost irreducible minimum—both here in our own job enameling plant and in the enameling plants of our customers.

Ing-Rich field engineers, tops in their field . . . and . . . plant tested too, are available to our customers as trouble shooters. They bring to you that invaluable combination of scientific approach and thorough understanding of actual working conditions.

YOU WON'T HAVE COSTLY "DRAWS" WHEN YOU USE ING-RICH FRIT!

ING-RICH
PORCELFRIT
"The Plant Tested Frit"



Anti-corrosion dipping — *latest innovation at Pastushin Aviation Corp., Los Angeles — is speeding production of jettisonable fuel tanks in a conveyor dipping line which immerses fuel tanks parts into five different baths. The system applies a corrosion-resistant coating to aluminum surfaces of the tanks. The tanks ar cleaned, rinsed, coated, rinsed again, acidulated rinsed, and dried by convection currents — all within five minutes.*

Corporation's Berger Manufacturing Division, the company appointed three additional district sales representatives. This was another step in the expansion of the recently-launched sales program for the company's new "ore to store" kitchen cabinet operation. (*See story on production operations at Berger Mfg. Division in March 1953* finish.)

THOR STEPS UP ADVERTISING BUDGET

Robert J. Runge, advertising manager for Thor Corporation, Chicago, has revealed that Thor's advertising budget for 1953 will be approximately $2,000,000 . . . . believed to be one of the largest scheduled by any washing machine manufacturer. While the largest single medium will be television, the program also includes newspaper advertising, trade publications, national advertising and national promotions.

VIRGINIA VAN NOSTRAND JOINS ADMIRAL CORP.

Admiral Corporation has appointed Virginia Van Nostrand as supervisor of branch economists. She was formerly supervisor of product counselors in the home service department at General Mills, Inc.

SMITH NAMED DIR. OF PUR. FOR FRESH'ND-AIRE - GRAYSLAKE

Elmer Smith has been appointed director of purchases at the Grayslake, Illinois plant of the Fresh'nd-Aire Co., a Cory Division. He was previously with the American Brass Div. of Anaconda and Massey-Harris Company.

The Grayslake plant, acquired by Cory Corp. last fall, will devote its entire 52,000 square feet of manufacturing facilities to production of fans, heater-fans, air conditioners and other air treatment appliances.

FRIGIDAIRE TO MAKE NEW WATER COOLER LINE

Frigidaire Division, General Motors Corp., Dayton, has introduced a broad new line of bottle and pressure-type drinking water coolers. The line will be available in three pressure-type models. New innovations include instantaneous cooling, toe-operated, electric bubbler control, a bubbler that holds uniform stream height with varying water pressures; splash-proof, white, stain-resistant, porcelain tops with provision for installing glass filler; gray-finished steel shells, phosphate-treated, moisture-resistant insulation, and adjustable glides on each corner for proper leveling.

MULLINS UPS ALDERMAN

C. D. Alderman has been elected vice president in charge of merchandising for Mullins Manufacturing Corp., Warren, Ohio. Alderman joined the company's kitchen sales department in 1938. He had been general manager of merchandising.

PEI DIVISIONS TO HOLD MID-YEAR MEETING

The annual mid-year meeting of the Porcelain Enamel Institute Divisions will be held at the Edgewater Beach Hotel, Chicago, May 6, 7 and 8. During these three days, equal time will be devoted to the affairs and activities of the Sign, Architectural and General Enameling divisions, according to announcement by John C. Oliver, PEI secretary.

The Sign Division will hold sessions on May 6, with Hugh McE. Patton of Ingram-Richardson Mfg. Co., as chairman. A $10,000 Market Development Program for porcelain enamel signs will be discussed along with reoganization procedure, and utilization of a promotion fund being raised by the Division.

On May 7, the Architectural Division, with Mark van der Kloet, of Erie Enameling Co., as chairman, will meet to discuss increased usage of porcelain enamel in curtain wall construction, revised standards for manufacture and erection of architectural porcelain enamel, and caulking compound requirements.

The General Enameling Division's session will be held on May 8. H. A. Ringelberg, of Challenge Stamping and Porcelain Co., will preside as chairman, and lead discussion of "new uses" in all fields, including architecture, art, industry, etc.

MIDWEST ENAMELERS MAYPOLE PARTY SET FOR MAY 22

The Midwest Enamelers Club's annual Maypole Party and golf out-

ing will be held Friday, May 22, at the Sportsman Golf Club, Chicago.

MC CORD, GOETCHIUS NAMED TO FERRO SALES POSTS

The appointment of John R. McCord, as manager of ceramic sales, and Donald R. Goetchius, as assistant manager of ceramic sales, was announced recently by C. D. Claw-

JOHN R. MC CORD

son, president of Ferro Corporation.

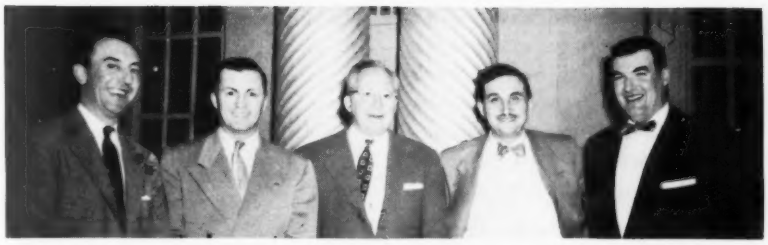
McCord was formerly appliance and equipment division manager for Owens-Corning Fiberglas Corp. An employee of Ferro since 1938, Goetchius is a two-time winner of the annual Robert A. Weaver Award for contributing the most to the progress of Ferro. *(A brief earlier announcement appeared in April* finish.)

EASTERN ENAMELERS TO MEET IN PHILADELPHIA, MAY 9

The program for the luncheon-meeting of the Eastern Enamelers Club, Saturday, May 9, will feature the following:

A talk on "Building for the Future" by C. L. van Derau, of Westinghouse Electric Corp.; and a panel discussion on enamel problems, with the speakers including Paul Cecil, Seaporcel Metals, Inc.; Don Goetchius, Ferro Corp.; E. E. Howe, Chicago Vitreous Enamel Product Co.; Fred Shaw, Bettinger Corp.; James Willis, Pemco Corp.

The meeting will be held at the Sylvania Hotel, it was announced by Robert F. Patrick, of Pemco Corp., Club secretary.



Chicago stampers *— discussed "Short Run Production" at their April 14 meeting at the Graemere Hotel which drew attendance of over 200. The speakers, left to right: John Kosky, Wales-Strippit Corp.; Melvin Lorentz, HPL Mfg. Co., Howard Stevens, Rezolin, Inc.; C. C. Caditz, Northern Metal Products Co.; and J. G. McCartney, S. B. Whistler & Sons, Inc.*

BINKS TO HOLD WEST COAST SPRAY FINISHING SCHOOL

Binks Manufacturing Co., Chicago, will hold its first West Coast spray finishing school in Los Angeles during this summer.

Classes will be conducted in a specially prepared room at the company's plant, in Los Angeles, during this summer.

Four one-week sessions will be held as follows: July 6 through July 10; July 13 through July 17, July 27 through July 31; and August 3 through August 7.

William Beacham, nationally-known spray finishing authority, is in charge of the classes. Requests for enrollment should be sent to Mr. J. E. Roche, Binks Mfg. Co., 4915 Blvd., Los Angeles, Calif.

For the 1953 sales meeting of Binks, E. F. Watts, sales manager, made the field force an active partner in planning the program. The company abandoned the lecture-type meeting in favor of informal discussion. Also, the meetings were moved from a hotel to the company's main Chicago plant *(see photo below)*.

RANSBURG APPOINTMENT

Ransburg Electro-Coating Corp., Indianapolis, Indiana, has announced the appointment of Korby Kemp as sales representative for the company in the New England area.

EBCO EXPANSION PROGRAM

The Ebco Manufacturing Company, manufacturer of refrigeration

Binks sales staff joins in informal discussion on policy at recent meeting held in Chicago. E. F. Watts, sales manager, leads the discussion.

appliances, has opened branch offices in New York and Chicago. These are the first company offices to be established outside the home office, Columbus, Ohio. Expansion program also includes a new 5-acre plant to be started in Columbus this spring.

ARMOUR RESEARCH OFFICES IN NEW QUARTERS

Armour Research Foundation of Illinois Institute of Technology, Chicago, plans to move its administrative headquarters into the 5-story Arcade building at 10 W. 35th Street and the Binga Bank building adjoining. The move is planned for midsummer.

Much of the available space in the Foundation's present main office will be converted into additional laboratories for research.

PARKINSON TO KAWNEER

Robert E. Parkinson has been appointed supervisor of materials research for The Kawneer Company, Niles, Mich. He is attached to the recently expanded research and development department which is carrying on new product research for Kawneer plants located in Niles, and Berkeley and Los Angeles, Cal. He had been a project engineer for Continental Can Co., Chicago.

● On most production lines the RANSBURG No. 2 PROCESS will give 25% to 75% MORE pieces per gallon than ANY other spray finishing system—2 to 4 times as many as hand spray.

Here are other EXCLUSIVE advantages:

1. *Eliminates conventional spray booths.*
2. *Eliminates practically all paint rejects.*
3. *Eliminates most building heat loss through exhaust systems.*
4. *Eliminates use of compressed air.*
5. *Eliminates skilled labor.*

Write for our descriptive brochure on the world's finest spray finishing system—the RANSBURG NO. 2 PROCESS—which shows representative, production installations in plants throughout the country.

Electrostatic Painting Processes

RANSBURG ELECTRO-COATING CORP.
Indianapolis 7, Indiana

RANSBURG

U. OF I. AND I-B-R SPONSOR SHORT COURSE

The University of Illinois and the Institute of Boiler and Radiator Manufactuers are co-sponsors of the seventh Short Course on Hot Water and Steam Heating Systems to be given at the University of Illinois, Urbana, June 15 through June 18. This will be a course similar to previous ones, in that it will consist of a combination of classroom work and lectures as a means of presenting the latest material on hot water and steam heating systems.

I-B-R TO TAKE SCHOOL OF MODERN HEATING WEST

With the growing importance of the western states as a market for boiler heat, the I-B-R School of Modern Heating will be held in several western cities next fall, among which are: Fargo, N.D.; Great Falls, Montana; Spokane, and Seattle, Wash.; Portland, Oregon; San Francisco, Cal., and Denver, Colo.

Further information may be obtained from The Institute of Boiler and Radiator Manufacturers, 60 East 42nd Street, New York 17, N.Y.

SHERWIN-WILLIAMS SPONSORS CHEMISTRY SCHOLARSHIPS

Five scholarships, each in the amount of $500 annually, have been established by The Sherwin-Williams Co., to foster the study of chemistry and chemical engineering as professions.

Schools at which the scholarships will be awarded during the 1953-54 academic year, and annually thereafter, are: Illinois Institute of Technology, Chicago; Mississippi State College, State College, Miss.; DePauw University, Greencastle, Ind.; Earl-

ham College, Richmond, Ind.; and Lawrence College, Appleton, Wis.

OPERATION "BING BONG"

Operation "Bing Bong" is the name of Westinghouse's new promotion, reputed to be the largest industry sales training ever staged for refrigerators, ranges, laundry equipment, water heaters and kitchen utilities.

R. J. Sargent, major appliance manager at Westinghouse, said the program is based on the idea that a salesman will tell the product story and only the product story he knows best. To insure salesmen knowing the Westinghouse story best, Operation Bing Bong features a simplified four-point sales story on each appliance. Between April 27 and May 22, over 8,000 telephone calls will be made to retail salesman across the nation asking for the four-point story on one of the company's major appliances. Cash awards will be made for successful answers to both the retail salesman and the distributor salesman who trained him.

A new idea in the promotion is a one-day sales training clinic for retail salesmen and dealers. Clinics will be held in more than 400 cities.

CALVELLO NEW CORY DIV. DIRECTOR OF PURCHASES

Peter G. Calvello has been promoted to director of purchases for the Cory Division of Cory Corporation, Chicago. He has been with Cory for nineteen years, associated with assembly, shipping and receiving, inventory control, personnel costing, and planning and purchasing. In his new position, Calvello will be responsible for procurement of all factory materials for the Cory Division.

BREMER TO DIRECT PURCHASING AT PACKARD

Roger E. Bremer has been selected to fill the post as director of purchasing at Packard Motor Car Co., Detroit, succeding Russell R. Reed, who is retiring. Oliver E. Rodgers has been appointed as chief engineer of the Jet Engine division.

"LEAKE ENGINEERING"

The Leake Engineering Company, a new engineering organization in the metal stamping field, will be located in Monroe, Michigan, and will operate as an entirely separate unit from The Leake Stamping Co. of that city.

An unusual addition to the highly specialized field of metal fabrication is provided through a complete service from the inception of an idea through every phase of production to the ultimate product, including product design, conversion, development and estimating stamping and die costs, die design and consulting services. The company will also supervise placement of stampings or dies and their tryout, when desired.

It is reported that the rapid expansion of press shops in end product plants has been faster than the availability of competent engineers to staff them, and has created the need for the unique service the new company will offer.

Just turn the dial and two elements are automatically cut in for quick pre-heating. Shortly before pre-heat temperature is reached, the control cuts out No. 1 element to minimize overshoot; then automatically cuts out No. 2 element, then automatically maintains temperature by recycling No. 2 element.

Although developed for electric ovens, here is a control that may solve many problems where it is desired to pre-heat quickly and then maintain set temperature automatically. This control has a maximum temperature range of 550°, is fully automatic, flexible, compact. It is easy to install in any of four mounting positions. Three basic models are available.

Write for full information.

Robertshaw-Fulton CONTROLS COMPANY

ROBERTSHAW THERMOSTAT DIVISION YOUNGWOOD, PA.

R. L. O'BRIEN DIES

Raymond L. O'Brien, president and general manager of Detroit Brass & Malleable Co., died March 24. Death came to the widely-known executive while in New York City on a business trip.

Mr. O'Brien became actively associated with the gas industry early in the twenties as a gas valve salesman. He had been instrumental in furthering the standardization of gas appliance components through efforts in conjunction with the American Gas Association. He was chairman of the Gas Valve Division for 10 years, and served on the board of directors of GAMA for 15 years.

BALLEY ADDS MANUFACTURING SPACE FOR ADDED PRODUCTION

Bally Case and Cooler Co., Bally, Pa., has expanded its manufacturing facilities considerably to meet the demands of regular business and heavy Army Quartermaster Corps contracts for walk-in coolers.

To provide the needed space, Bally made a modern manufacturing plant out of a 90 foot by 140 foot, fireproof steel and concrete building formerly used for inventory storage. This converted structure, built in 1948, is now providing 12,600 square feet of floor space solely for production of walk-in coolers. A complete line of sheet metal working and welding equipment have been installed.

After fulfilling the major Army contracts, Bally will use the building for the production of the new Bally Servicold case, and a new Bally open style freezer.

NEELY APPOINTED STAFF ENGR. FOR L-P GAS ASSN.

Howard D. White, executive vice president of Liquefied Petroleum Gas Association, has announced the appointment of Chris F. Neely as staff engineer of the Association. Neely will devote his time to the organization's technical and safety activities and will make his headquarters at its executive offices, Chicago.

NEW HERCULES POWDER LAB

A new sales-service laboratory to provide additional technical assistance to the protective coatings industry has been established by Hercules Powder Co. at the company's experiment station, Wilmington, Delaware. It will be under the direction of James R. Yeager, manager market-development coatings, cellulose products dept. Rufus F. Wint will act as coordinator, and Gregory N. Bruxelles as supervisor of the laboratory.

CENTRAL OHIO ACS SECTION

William Cannon, Jr., of the Magnaflux Corp., Chicago was speaker for the March 13 meeting of the Central Ohio Section, American Ceramic Society in Columbus, Ohio. His talk on "Non-Destructive Testing of Ceramic Materials" was illustrated by numerous lantern slides showing the use of various methods of testing and their principles of operation.

*One of a series showing case histories of product appeal achieved thru metal mouldings.

STANDARD MOULDING ANSWERS A 3-Way PROBLEM

How to glorify a clock—conceal a flue vent—and bring an entire back splash to life. That was the problem one stove manufacturer† brought to Pyramid design engineers. The answer: a stock moulding—plus an inexpensive radius trim die to tailor it to the need...and a new range design was born.

You, too, can draw on Pyramid's twenty-five years of service to industry with metal mouldings. Whether your needs are standard or special...whether they call for sparkling stainless or inexpensive cold rolled steel—you'll find *your* answer in America's most modern metal moulding plants.

†Name on request.

Pyramid Mouldings Inc.

5365 West Armstrong Ave., Chicago 30, Ill.

New York California

TINNERMAN APPOINTS TWO

Tinnerman Products, Inc., Cleveland, has announced two major appointments in the purchasing department. Ralph F. Merriam has been named director of purchases, and Edward W. Wehrle has been named purchasing agent.

SEARS SHOWS COLDSPOT WITH FREEZER CHEST AT THE BOTTOM

Sears, Roebuck and Co. has introduced a revolutionary design in its new Coldspot Super-Mart refrigerator which has the freezer chest located at the bottom of the refrigerator compartment.

Officials explained that in working out this storage system, Sears engineers and home economists "planned the entire interior arrangement to give the greatest accessability to the most frequently-used food items." Nearly 85 per cent of the food storage is at eye level or finger-tip location.

The industrial design firm of Sundberg-Ferar collaborated with Sears in the design and styling of the Super-Mart. It is being manufactured by Seeger Refrigerator Co., Evansville, Ind.

REY CHING TUNG APPOINTED TO FELLOWSHIP AT U. OF I.

It has been announced that Rey Ching Tung has been appointed to a Fellowship in the Graduate College of the University of Illinois for the academic year 1953-54. He received his B.S. in Ceramic Engineering from the U. of I. in February, and is working toward his Master's. He is specializing in porcelain enamels.

PENNSALT PLANT EXPANSION

Expansion of production facilities during 1952 and the acquisition of Sharples Chemicals Inc. early this year have given Pennsylvania Salt Manufacturing its broadest base, according to George B. Beitzel, president.

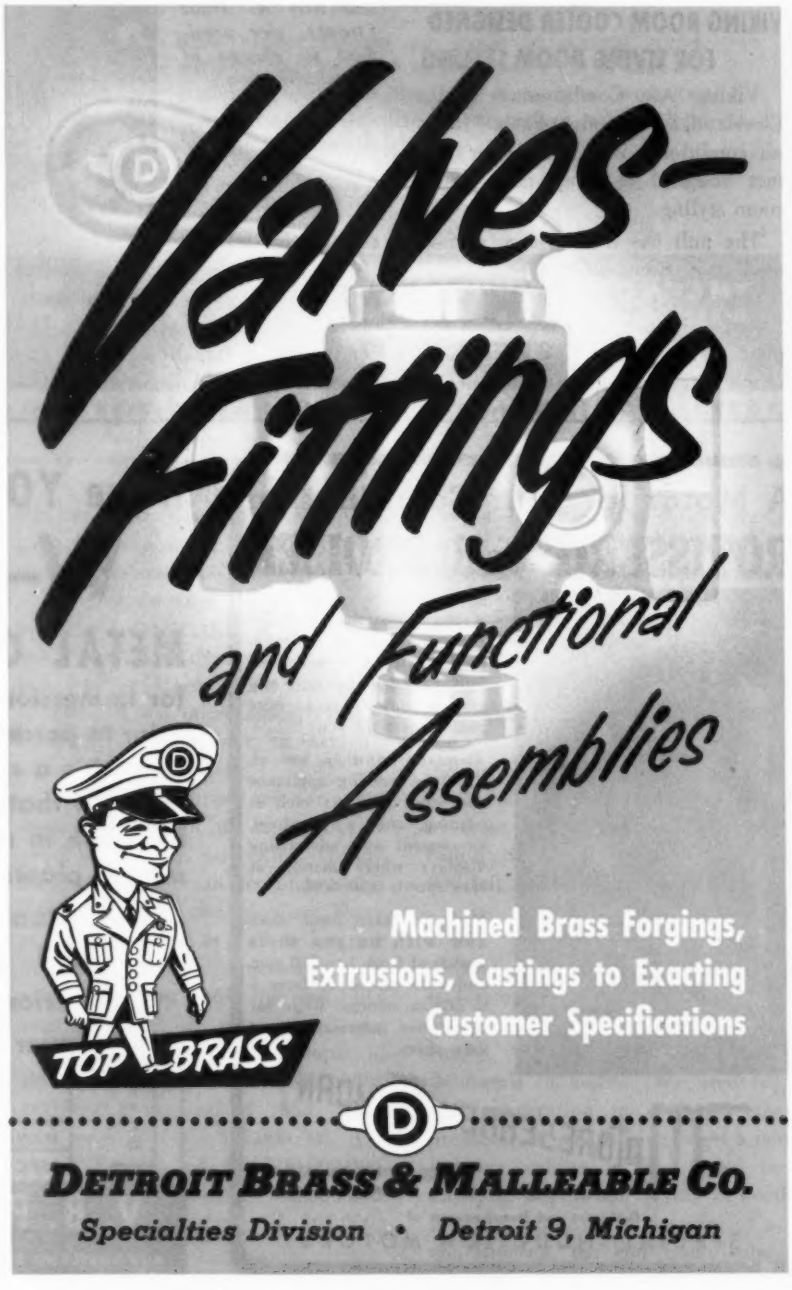
Expansion costs during 1952 were $7,280,000 — more than in any previous single year — including expenses on a new $8,000,000 chlorine, caustic soda and anhydrous hydrogen chloride plant at Calvert City, Ky., due for completion in mid-year, and on facilities to more than double production of synthetic ammonia at Wyandotte, Mich., also due for early completion.

New construction was going on at some time throughout the year at every one of the company's plants, either expanding production capacity of existing installations or adding new facilities.

ROLLED ALLOYS SALES MGR.

Rollo W. Boring has been appointed sales manager of Rolled Alloys, Inc., Detroit. The firm, recently organized as an independent company, specializes in distribution of rolled mill forms of chromium and nickel-chromium alloys for use at elevated temperatures.

Boring will organize and direct sales and service centers in the major industrial areas to better serve this rapidly expanding market.



U.S. RADIATOR ENTERS AIR CONDITIONING FIELD

Entry into the field of summer air conditioning by United States Radiator Corp., Detroit, was announced by W. C. McCord, president.

The units will be available in 2, 3, 5, and 7.5-ton units, with one model designed for installation in connection with basement-type warm air furnaces, and another model for attic and utility room installations.

***8 millionth washer** is heralded by Maytag executives, assisted by pretty Peggy Dodd, of assembly department. Left to right: George Umbreit, exec. vice pres. and treas. (left); Robert E. Vance, secretary; and Roy A. Bradt (front), vice president in charge of distribution.*

VIKING ROOM COOLER DESIGNED FOR LIVING ROOM STYLING

Viking Air Conditioning Corp., Cleveland, has introduced a new room air conditioner with an exterior cabinet designed to complement living room styling.

The unit has a handsome perforated grill, accented with a striking "flying V" insignia. The front panel features flowing lines of sculptured plastic fluting. The operating panel is glow-lighted for easy operation, even in the dark.

Three controls on the Viking unit permit the selection of several methods of cooling and ventilating. The conditioner dehumidifies, filters, circulates and cools the air. In addition, the fan may be used separately with the cooling unit turned off, to exhaust stale air. The unit will fit into any window from 28 to 48 inches wide, sliding into a support frame like a file drawer into a cabinet.

★

A Motor for your Combination

ROTISSERIE and BROILER

• If you manufacture a Rotisserie, Broiler or a Household Range, a motorized Spit provides the new and modern way to cook—here is the motor for you.

Thousands now in use on this type cooking appliance and other products such as vending, coin operated, amusement and advertising displays where motion at slow speeds is desired.

Made in three basic sizes and with output shaft speeds of from 1 to 500 rpm and with torque of from 5 to 500 in. ounces. Write for descriptive information and data sheet.

MOTORESEARCH COMPANY

1600 JUNCTION AVENUE
RACINE, WISCONSIN

Designers and Manufacturers of
SPECIAL INDUCTION MOTORS

★

Have YOU Tried W-A1 METAL CLEANER

for immersion cleaning prior to porcelain enameling? It's a specification material that has proved its worth in many enameling plants.

Same Quality and Same Price for over 4 years

?

EPCO

MANUFACTURERS OF
LEPCO PRODUCTS

V. B. PUNDERSON COMPANY

402 SWETLAND BUILDING — CLEVELAND 15, OHIO

NAGEL-CHASE V-BELT PULLEYS

for AUTOMATIC WASHERS and DRYERS

For a better pulley that offers production economy as well, specify Nagel-Chase V Belt Pulleys for your automatic washers and dryers.

Made by specialists in pulley and caster manufacture, they are precision-built from welded pressed steel for long trouble free service with minimum belt wear. The solid steel hub is designed so that the pulley cannot come loose.

Nagel-Chase V-Belt Pulleys are made in several styles, with or without bushings and as stepdown pulleys with the smaller pulley turned into the hub or integral with the larger. They may be supplied unfinished or with a long lasting aluminum lacquer finish.

Whatever your pulley requirements — consult Nagel-Chase first — it will pay you!

THE NAGEL • CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

ALSO MANUFACTURERS OF NAGEL-CHASE WASHING MACHINE CASTERS

EEI conference

→ *from Page 59*

Four causal aspects for the slow but steady upsurge in American industrial activity were presented by Gainsbrugh: the expansion in private, rather than general sectors; the upsurge developed in a non-inflationary environment; consumer buying expansion was not made at the expense of personal savings; on net balance, net savings were at record non-war heights.

As a counter balance of caution, Gainsbrugh cited these elements of imbalance: the condition of consumer installment debt; possible downward pressures on the price level; internal sources may provide far less funds required for expansion of fixed assets; hard-goods industries may enter on a gradual inventory liquidation.

Vast business seen in room air conditioners

John M. Otter, vice president and general manager, refrigeration division, Philco Corporation, told his EEI audience that there is a vast business ahead in the room air conditioning business.

However, he warned that "None of us should forget that it is a very young industry that will need the help and guidance of all those who in the past led other manufacturers of the appliance industry to maturity successfully.

"Not all industries are fortunate enough to come of age at the time of great prosperity," said Otter. "Today there is not only an acceptance and demand for air conditioning. There is enough money around to buy air conditioning. The American economy is the most liquid the world has ever seen.

"Liquid assets of the people of this country totalled about $195,000,000,000 at the end of 1953. They had cash — $21,300,000,000. Demand deposits of $33,500,000,000. Savings accounts of $60,000,000,000. Government securities of $61,000,000,000.

Otter then asked "Do you know how much that is? It's enough money to pay all present consumer credit outstanding in cash. It's enough money to buy the entire production of the automotive industry for this year for cash. In addition, it is enough money to buy all the houses that will be built this year. It is enough money to buy for cash all the listed stocks on the New York Stock Exchange, and after buying all of these things, the people of this country would still have $29,000,000,000 left over.

Public warming up fast

Otter concluded that "The public is warming up fast, but they need plenty more selling and a lot of educating. Wiring is still a problem in thousands of homes. We need help and cooperation to overcome that problem. It is expensive to get a new industry rolling in high gear, but anything worthwhile having is worth fighting for. And in the case of air conditioning, the end result cannot help but justify the needs." →

Appliances unlimited

Clarence H. Linder, vice president and general manager, major appliance division, General Electric Co., addressed the EEI conference on the subject of "Appliances Unlimited."

He stated that "The appliance industry will be a rapidly growing factor in our economy during the immediate years ahead." He cautioned, however, that "It is imperative that the utility and appliance industries join hands to fully realize the projected program."

He declared that General Electric has expressed its confidence in the future "in excess of $200 million dollars for the construction of Appliance Park at Louisville, where ultimately will be consolidated all of the company's major appliance operation . . . . This is the largest single project on which the General Electric Company ever has embarked."

OUR PLANTS are part of your production line...

FIBERGLAS* TESTS like this can help you confirm your own findings on product thermal performance.

..and this quality feature is part of your selling line!

OWENS-CORNING FIBERGLAS insulated

TUNE IN "ARTHUR GODFREY TIME", sponsored by Owens-Corning Fiberglas Corporation, broadcast over a nationwide CBS television and radio network.

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

Refrigeration, air conditioning assns.

→ *from Page 37*

George S. Jones, the new ARI managing director, is well known in the refrigeration and air conditioning industry. He is a former president of the National Federation of Sales Executives, and served as president of the Air Conditioning and Refrigeration Machinery Association in 1949. He has also been actively associated with REMA. Previous to joining Servel, Inc., he was regional manager and later director of public utility sales for the Frigidaire Division of General Motors Corp.

REMA elects officers

L. C. McKesson, vice president—sales, Ansul Chemical Co., Marinette, Wis., was elected *president* of REMA during their annual meeting. He succeeds John E. Dube, president, Alco Valve Co., St. Louis.

Lud Emde, president, Temprite Products Corp., Birmingham, Mich., was elected *vice president.*

Other officers elected include James Emmett, Jr., vice president, Jas. P. Marsh Corp., Skokie, Ill., *treasurer,* and Cecil Boling, president, Bush Mfg. Co., West Hartford, Conn., *secretary.*

Enamels for aluminum

→ *from Page 33*

enamel had excellent adherence and was resistant to the action of cold water, but was not resistant to reaction by boiling water. This enamel should serve as an acceptable ground coat and may be covered by an ordinary, or acid-resistant enamel. The excellent adherence achieved by the formation of an oxide layer by preheat treatment recommends it as an effective, inexpensive and simple process of metal preparation.

Additional work has been suggested by this investigation and should cover the use of amblygonite as a substitute for lithium fluoride.

ACKNOWLEDGMENT

The author wishes to thank Dr. J. I. Mueller for his valuable advice

and criticism and the interpretation of the X-ray patterns.

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PEI meeting on West Coast

→ *from Page 36*

Myers ended his talk with an appeal for all members of the porcelain enamel industry to cooperate in making porcelain enamel and its applications familiar to college groups of engineers and architects. "If these young people are familiarized with porcelain enamel, its advantages and applications, they are bound to give it more consideration after they leave school and enter industry," Myers said. He then demonstrated a color film showing the preparation of porcelain enamel and its uses in industry. This film is available to any PEI member wishing to make a talk befor a coilege group.

H. H. Wineburgh, of Texlite, Inc., and PEI vice president, described the tremendous market possibilities for porcelain enameled signs. "In some areas, more than 80 per cent of the signs are still painted," he said. "But we have a keen competitor in the relatively new plastic sign industry. But a porcelain enameled sign has definite advantages if we make them known".

Wineburgh pointed out that the market for architectural enamel has hardly been touched as yet, and can be increased from 5 to 10 times with proper effort. "However, we must improve the general quality of our architectural enamel," the speaker warned.

Edward Mackasek, PEI managing director, enlarged on the possibilities inherent in enameled signs and architectural enamel. He described the $50,000 industry-sponsored Curtain Wall Program, and the tremendous effect development of curtain wall building construction could have on the porcelain enamel industry.

"The possibilities in architectural enamel are too vast to visualize, but our first job is to develop standards," Mackasek said. "From this visit, I have obtained the impression that West Coast architects have grasped the possibilities inherent in architectural enamel better than architects in the east.

Material: Clay Slip.
Problem: Short pump life caused by abrasion.
Solution: Moyno handles slip of 1.8 specific gravity—and gets about 1 year service on rotor and stator. Customers well pleased.

Material: Paint Primer and Surfacer.
Problem: Finding pump that would offer reasonable service life.
Solution: For past 2 years, Moynos have been pumping these abrasive materials at 40 p.s.i.—and maintenance costs are minimum.

Material: Special Navy Paint.
Problem: Low volume of gear-type pump; necessity for pre-heating paint before pumping.
Solution: Moyno cuts tank-car filling time from 10 hours to 2⅓ hours. No maintenance costs for past two years!

Material: Baking Enamel and Primer.
Problem: Recirculating abrasive material in closed system at 90 p.s.i.
Solution: Moyno pumps used successfully, with minimum repairs, for the past 4 years and are kept in operation 24 hours per day.

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Features of the MOYNO that may solve YOUR pumping problem

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Gentle — no churning; won't break up semi-solids; won't aerate liquids.

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Trouble-Free — self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

Looking for a pump with a fast-growing reputation for solving tough problems? Take a look at the simple, versatile Moyno!

Briefly described above are a few of the many successful case histories proving how Moynos handle jobs where other pumps failed. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps—rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

If *you* have a pumping problem caused by abrasive or corrosive materials—watery, viscous or even semi-solid—find out if the Moyno can help you! Mail the coupon.

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Pump Division, Springfield 99, Ohio
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*City*_____ *State*_____

John C. Oliver, PEI secretary, spoke on "The Safe Transit Story", its background, and accomplishments to date of the Safe Transit Committee. "Shipping losses were severe right after World War II, and lead to the development of this movement," Oliver said. "We immediately devised and instigated a series of package tests to simulate transit conditions. These tests have proved very successful in the development of better packaging and crating techniques."

Most porcelain enameling firms are now cooperating and are using the Safe Transit label, Oliver said. "More than 12 million Safe Transit labels were used last year. The program now pays its own expenses, and is attracting attention of other industries. We now have both radio and television manufacturers cooperating in the program."

Oliver's speech was followed by a panel session of talks by *J. Eagle,* of Pemco Corporation; *E. M. Hommel* of The O. Hommel Co., and *J. E. Hansen* of Ferro Corporation.

Eagel discussed the availability of strategic porcelain enamel frit supplies. Hommel told of recent increased use of porcelain enameled products, and of new porcelain enameling facilities recently built or now under construction.

FINISHFOTOS OF MIDWEST ENAMELERS

Midwest Enamelers Club officers with speakers at March 14 meeting. Left to right: George Zink, A. O. Smith, program chairman; Ray Witschey, A. P. Green Firebrick, speaker; George Tuttle, Benjamin Electric, president; and D. M. Meeker, of Toledo Porcelain Enamel Products, speaker.

Left to right: Joe Baker, International Harvester; Jack Ferguson and R. C. Thompson, both of Maytag.

Dr. E. P. Flint and Dr. M. J. Day, of Armour Research Foundation; and Henry Oesterle and R. A. Oesterle, of Roesch Enamel.

Hansen described West Coast developments in the use of low temperature enamels, in research on enameling aluminum, and in the use of high temperature resisting enamels on low alloy steels to replace certain critical alloy steels for high temperature applications.

The evening joint meeting of the PEI officers and the Pacific Coast Enamelers Club was highlighted by talks by W. A. Barrows and R. A. Dadisman.

PEI and its relation to the industry

Barrows subject was "The Porcelain Enamel Institute and its Relation to the Industry."

The battle for new business has become a battle among industries, not a battle within an industry, Barrows said. To illustrate this point, he used the competitive battles now raging between the dairy industry vs. margarine, frozen vs. canned foods, plastics vs. leather.

"Individual effort and superior products are not sufficient to win this battle," Barrows said. "These superior products must be properly 'plugged'. We in the enameling industry must employ cooperative promotion of enameled products. Competitors within the industry must walk hand-in-hand in this cooperative effort. Intra-industry competition must bow before cooperative standardization of enameled products."

The PEI president then pointed out the importance of maintaining laision between the porcelain enamel industry and various governmental departments and agencies. "This is a major function of PEI," he said. "In this work, our interest lies in porcelain enamel only, not finished products.

"We must keep porcelain enamel jobs from being lost to other industries even if it means handing the job to one of our intra-industry competitors," Barrows finished.

Industry expansion

R. A. Dadisman pointed out the vast expansion of the porcelain enamel industry during the past ten years, and predicted future growth

based on this record of expansion. Interesting figures used included the following:

Applications of porcelain enamel in square feet during

1920—30 million
1930—125 million
1940—225 million
1949—400 million

Projected on this rate of growth, the number of square feet of porcelain enamel applied in the future will be

1960—700 million
1970—900 million

"But if we want something, we must reach for it," Dadisman warned. "This applies to new markets for new products. We must beat other industries to the grab.

"Most major executives in the porcelain enameling industry were far younger men than they are today when they developed the ideas that established their present business. This ought to be used as an omen to give younger men and their ideas a chance."

Case symposium

→ *from Page 48*

are trapped and are not drawn off. Check the exhaust vents to see that they are not closed and if necessary circulate more air thru the oven. The exhaust system of ovens is a definite factor in the overall uniformity of temperature, and is just as important as the heating unit. When an enamel does not flow properly, it is very often caused by a lack of sufficient air drying period before entering the oven, or the temperature in the oven is initially too hot.

Formation of blisters and blow holes noticeable in knifing putty or in the films of top coats over knifing putty, particularly after baking, are caused by the enclosure of ultimately volatile or even of gaseous products, such as air within heavy films. This may be caused by insufficient air drying time before baking, or baking at too high a temperature, or subjecting the film to a sudden high temperature.

Normally, heavy knifing coats should be air dried until superficial drying has set in and then baked in a gradually increasing temperature.

In a primer and enamel system, unsatisfactory adhesion and brittleness, poor water immersion resistance, etc. may be due to under baking or over baking the primer. The maximum temperatures for the first coat must always be considered in conjunction with the baking of the last coat.

How to check temperature of infrared ovens

An accurate method of checking the temperature of an infra-red oven is bolting a thermocouple attached to a long lead wire to an object being painted, and sending it through the oven. The thermocouple operating through a pyrometer establishes the temperature at any given instant, and a time-temperature curve may then be plotted for that oven.

Burned-out or broken infra-red bulbs should be replaced immediately. Also the bulbs must be cleaned very often in order to maintain their highest efficiency.

Dirt in the finish coat is always a problem in the finishing room. The only method to combat this is good housekeeping and periodic maintenance. Into the category of maintenance of a baking oven, I would place the cleaning of solvent condensation in the exhaust ductwork, the regular cleaning of fans and ducts, the checking and cleaning of burners, fresh air inlets and combustion zones.

In the northern part of this country, gas is an ideal fuel for heating ovens. However, it presents its share of problems in the safe operation of paint baking ovens. The chief cause of explosions and fires is vapor or gas concentration. These vapors may be explosive vapors from the solvent in paint, or they may be a concentration of the fuel gas itself, or they may be a combination of the two, concentrated in either the oven enclosure, within the ductwork, or within the air heater.

These concentrations or pockets of gas or vapors are usually caused by exhaust fan failures, air failure, or control failure.

Sometimes solvent vapor concentrations are formed in box-type ovens, if the oven has been charged with its complete load before the circulating and exhaust fans and burners are operated. This initial surge of ex-

"OFFHAND, MADAM, I'D SAY YOU COULD MAKE THINGS PRETTY WARM—NO MATTER WHAT BURNER YOU WERE COOKING ON."

plosive vapors may exceed the capacity of the exhaust system. Then dangerous concentrations within the explosive range are likely to occur. In a paint oven, the preliminary exhausting of the solvents as the oven is coming to temperature, or as it is being loaded, may reach a maximum peak during which time the exhaust system would be forced to handle approximately 10 to 15 times more explosive vapors than after the initial solvents have been evaporated. The easiest way to overcome this condition is by the simple expedient of making sure that the fans are in operation while the oven is being loaded with fresh sprayed or dipped work, before the burner ignition takes place. Thus the vapors are continuously exhausted at the rate at which they leave the paint film in the oven.

On conveyorized ovens, gas concentrations normally are unlikely to form because the work is more or less continuously introduced by the conveyor, so that the evaporation of the solvents within the oven approaches a constant rate.

A carefully controlled oven is the best insurance for quality work.

Phenolic coating for protecting metal from corrosion

by W. R. LAWTON, Permolite, Inc.

LET us define a phenolic coating as that material which contains the condensation products of phenol or its homologs with formaldehyde. We shall also restrict the term "modified phenolic" to those materials which contain a pure phenolic resin blended with other compatible materials.

The coatings obtained from phenolic resins are thermosetting with a high degree of hardness and abrasion resistance. The general physical properties of these coatings are: A somewhat limited degree of flexibility; A very dense film with high electrical resistance; A generally glasslike appearance with a discoloration obtained upon cure.

Phenolic and modified phenolic coatings have been used with varying success for coating duct work systems, fan and impeller blades, chemical processing tanks, oil industry and chemical industry pipelines, filter plates, plating tanks, hot water tanks, and other similar applications.

We generally follow three basic principles for recommendations of coatings for protection against corrosion. These include a proper surface for the bonding of the coating; the correct technique for the application of the coating; and a judicious selection of the proper type of coating to satisfy the corrosion needs. We feel that if any of these three are slighted that the greater part of the protection needed will be lost.

Metal preparation

With reference to metal preparation, we very strongly recommend the following: (1) Removal of all weld splatter, sharp edges and roughened surfaces on the equipment to be coated; (2) A degreasing procedure which will remove all oil and grease and foreign material; and (3) A well sandblasted surface just prior to the time of application.

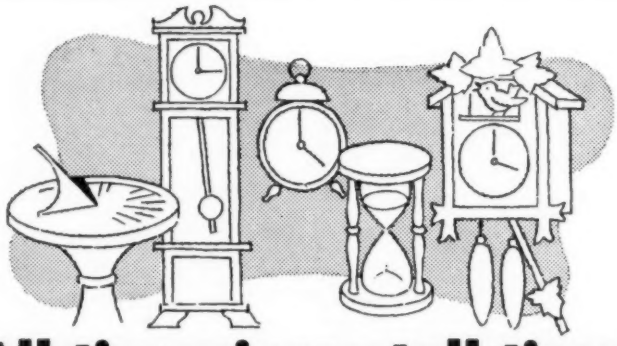
Where conditions will not permit a sandblast procedure, metal etching with nitric acid, hydrochloric acid, or other type of etching agent, has been used, followed by a passification of the surface with a phophate coating.

Zinc coated surfaces are generally coated with a complex phosphate solution after thorough cleaning.

Aluminum materials may be alkali etched and brightened with a weak acid solution or treated with other processes.

In any case, the equipment should be force-dried before application of the coating is started.

Phenolic systems are usually set up to contain a priming system with a finished coat. The unmodified phenolics must be handled carefully to obtain a continuous, homogeneous film free from pinholes and blisters. The unmodified phenolics usually have a curing range somewhere be-



All timepieces tell time!

Time is an important element especially when it involves cleaning, stripping, coating or other prefinish operations. Time is important as an element in quality and in cost.

Difficulty in attaining the result you seek may be a matter of timing only. Klem Engineers will not only specify the proper chemical for your job, but steer you in proper application, timing, temperatures, concentrations, etc. The extensive experience of this organization and lab facilities for exactly duplicating your conditions make possible more accurate analysis and recommendations.

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MINIT KOTE—Cleans, neutralizes, phosphatizes ferrous metals and aluminum surfaces in 60 seconds for better paint adhesion.

BRITE KOTE No. 80—Protective dip before storage of copper and brass, removes all oxides and stains—an excellent protection from further corrosion

KLEM KLEANER No. 167-PG—Still or soak tank cleaner for non-ferrous metals. Economical, efficient—will safely remove normal types of soil.

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tween 350°F and 400°F. In order to avoid a laminating condition, the coats should be applied and prebaked at temperatures below the curing conditions of the particular phenolic. Care must be exercised in the final bake in that the proper degree of cure is obtained. Under-curing will result in very poor chemical resistance, while over-curing will result in loss of flexibility and adhesion.

The choice of coating to be used depends upon the conditions of corrosive atmosphere, temperature of operation, flexibility needed, and degree of hardness necessary. Generally, the phenolic coatings are among the hardest plastic materials used for protective coatings. Their flexibility may be very greatly increased by use of proper modifying agents. However, unless there is a chemical reactivity between the phenolic resin and the modifying agent you must expect corrosion resistance most near to that material which has the weakest resistance.

Generally, we can classify the corrosion resistance of phenolics and modified phenolics along the following lines:

Corrosion resistance

The unmodified phenolics have generally high corrosion resistance against mineral acids other than those of the oxidizing types. For nitric and chromic acid you should be extremely cautious in the use of either a straight or a modified phenolic. This is especially true when conditions of elevated temperatures are to be met. Unmodified phenolics have been used against sulphuric acid up to 66° Baume giving service for a range of approximately eight months to a year and a half.

Phenolic resins can be used for contact with 85% and lower phosphoric acid, 37% and lower muriatic or hydrochloric acid. For acids such as perchloric, nitric, chromic, and similar types, an extensive evaluation of the coatings should be made before attempting to protect with a phenolic type coating.

Unmodified phenolic coatings are not resistant to alkali or ammonia environments. However, there are several modifications of the phenolic resins which can be used against alkali but caution should be observed when applying these types of coating against ammonia service.

The unmodified phenolics have limited resistance against the lower molecular weight organic acids, such as formic, acetic and butyric acid. Again, a greater degree of resistance can be obtained by the proper modification of the phenolic resin.

Phenolic resins generally have good resistance against the fatty-type acids. A good phenolic resin should be unaffected by both aliphatic and aromatic hydrocarbons. The unmodified phenolic coating has limited resistance against halogenated hydrocarbons such as methylene chloride, perchlorethylene and trichlorethylene and the halogenated aromatic hydrocarbons such as monochlorobenzene. Modification of the phenolic coating can give a greatly increased resistance to these materials.

Unmodified and some modified phenolic coatings are generally resistant to alcohols, ketones and esters. The use of unmodified phenolics should be approached with caution when this type coating is to be applied against lower molecular weight aldehydes. Modification of the phenolic resin can give some increased resistivity to these materials. The unmodified phenolic has somewhat poor resistance against polar aromatic chemicals such as phenols, anilines, and aromatic aldehydes. This is also true when the unmodified phenolic

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is to be used against a heterocyclic system such as pyridine, furfural, furfuryl alcohol, and similar type materials. Very good resistance against these materials may be obtained by the proper modification of the phenolic coating.

Phenolic coatings and modified phenolic coatings generally have a high resistance to many types of salts. Their resistance against sodium chloride is excellent. Modified phenolics have also shown very strong resistance against the active salts, such as, ferric chloride, aluminum chloride and similar types. No difficulties have been encountered with either phenolic or modified phenolic coatings against the non-reactive type salts.

Recommendations

In conclusion, I would like to recommend that phenolic coatings should be applied either in an experienced applicator shop or supervised by personnel qualified to apply this type of material. Also, it is wise to either set up your own evaluation or evaluate the coating through laboratories giving reputable results and from these results specify to the applicator the exact procedure to be used for the application of the material.

The normal costs for applying phenolic coatings in the applicators' shops will vary from 90¢ per square foot to $150 per square foot, depending upon the conditions and the location. Generally, a minimum film thickness of five mils should be specified where the coating is to go into process equipment or under very extreme corrosion conditions. Thinner films may often be used for coating of storage containers but in all cases, freedom from pinholes and blistering is of prime importance.

Ultrasonic cleaning

→ *from Page 28*

Fully conveyorized, it is represented as the largest commercial unit ever built for ultrasonic cleaning. The new equipment will permit the precision cleaning of shaver heads at a rate appreciably greater than other cleaning methods, the manufacturers report.

Editor's Note:

The newness of this development precludes editorial comment on its practical possibilities. The technicians responsible for its development to industrial use feel that it is only a matter of time until production problems are overcome and larger ceramic transducers are manufactured to broaden application possibilities.

The process is suggested in cases where exceptional cleaning quality is required or where parts have fine openings, crevices and other hard-to-clean forms. It can be added to regular degreasing equipment for "the maximum refinement" in cleaning a part.

Tool engineers

→ *from Page 52*

sweepers were given a new design and production was upped to 550 per day. Longer life for the brushes was a result of the new design, he said.

Denne also cited money and time saving uses of metal stitchers in many other manufacturing processes.

Flame-plating

Uses of "flame-plating" in varied fields were cited by W. L. Donnelly, research and development engineer, Speedway Laboratories, Linde Air Products Company, Indianapolis.

"Flame-plating is, in a nut-shell, the only method of depositing certain powdered metals in the form of thin coating on metal parts without dilution by base metal or welding rod," Donnelly told the assembly of production experts.

Hundreds of precision gages have been flame-coated and tests have proven the wear life of the gages has been increased two three times, Donnelly stated.

Sprayed-on fused coatings

Sprayed-on fused coatings that outwear hardened steel from 5 to 25 times were described by L. V. LaRou, chief engineer, Wall Colmonoy Corp., Detroit.

LaRou discussed wearproof alloys sprayed and fused on metal parts, such as tools, dies, gages and machine tool wear parts which resulted in tremendous reduction in maintenance costs. Ease of renewing the coating eliminates the cost of new tools or parts, he added.

"The latest techniques for applying these non-porous hard surfaces permit the application of alloys to steels, stainless steels, copper and some cast irons," LaRou stated.

The hard surfaces fused on tools or parts will not peel or crack off even under the severe wear conditions imposed in machining operations, he added.

May · 1953

safe transit

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Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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SAFE TRANSIT NEWS ST-18

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Office furniture — *being assembled and packaged at Art Metal Construction Co., Jamestown, N. Y. On desk assembly line, workers use power tools fed from electric trolley duct along ceiling; stock piles of desk components shown on the right. Photo below shows packaging of the finished steel desks for rail shipment. Packing materials, placed on each desk before group is started, speeds crating. Note crepe wadding in desk drawers, and use of crepe wadding and fibre board protection for desk tops. (See page 23 for story on production operations at Art Metal.)*

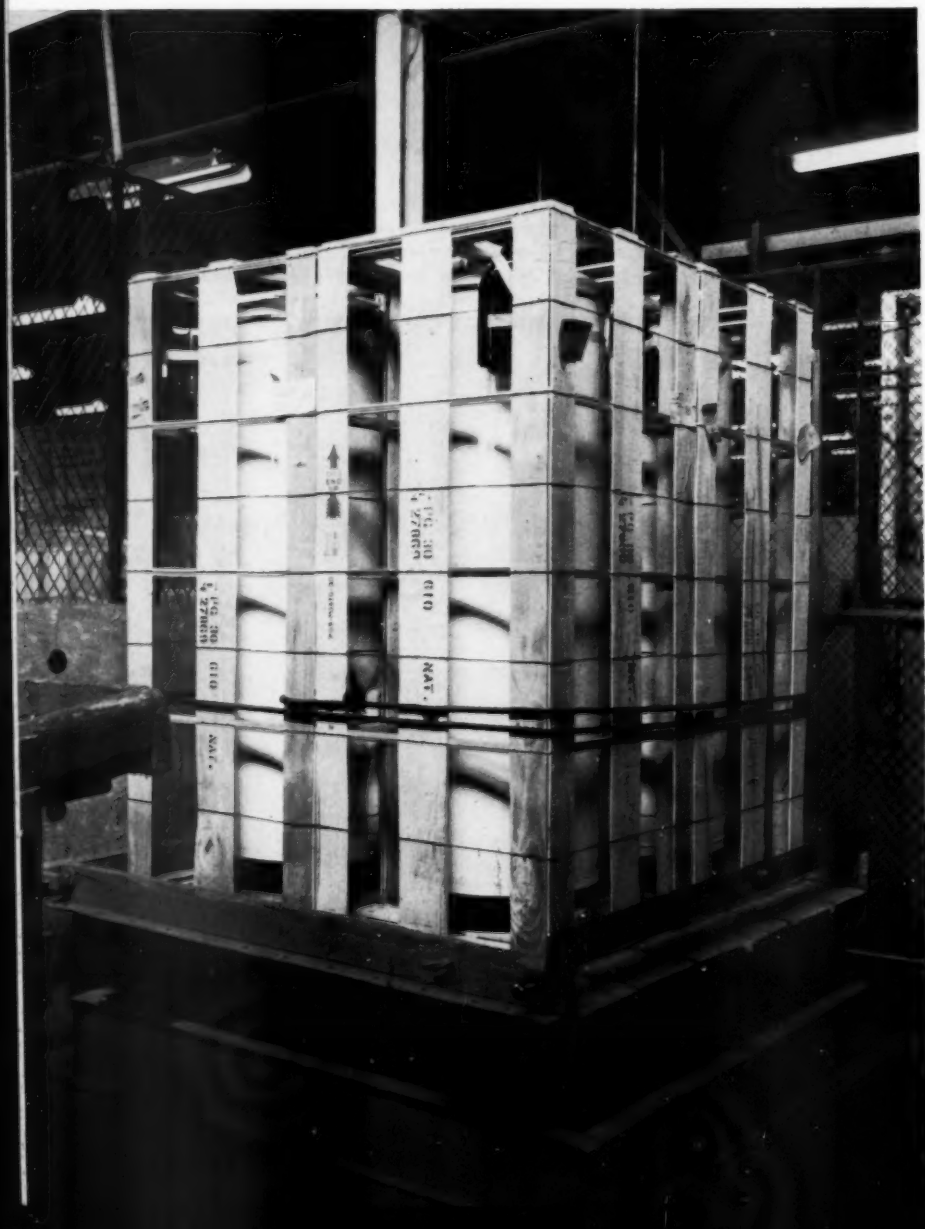
How SAFE TRANSIT has aided A. O. Smith

water heaters tested from each production run—tests also used for product quality control

by W. W. Higgins • CHIEF ENGINEER, PERMAGLAS DIVISION, A. O. SMITH CORP., KANKAKEE, ILL.

SINCE 1949, "Safe Transit" has been a vital part of our product design testing, and quality control program.

Prior to "Safe Transit" testing in our plant, our shipping damage seldom topped 2 per cent, and as a rule ran slightly under 1 per cent. Even so, some of our distributors and dealers were not too happy since, unfortunately, this damage was not evenly distributed. Certain geographical areas experienced greater damages than others, resulting in chronically high damage to some distributors and dealers. This, of course, was due to considerable railroad switching enroute to them. On investigation, our traffic department found that 3 per cent average shipping damage was about par for the industry and below 2 per cent was considered good. Merely telling this to the distributor or dealer, who had just received a number of damaged water heaters, did not pacify him. He inevitably did not believe in statistics.



We turned to "Safe Transit" testing as a guide and carried out a packaging redevelopment program. A number of changes were made in methods of locating the water heaters in the crates and methods of carloading were revised to the floating-load type. As a result, *our reported shipping damage is now only 1/10 of 1 per cent.* We *do not* feel that we are over packing.

Better customer relations at no increase in cost

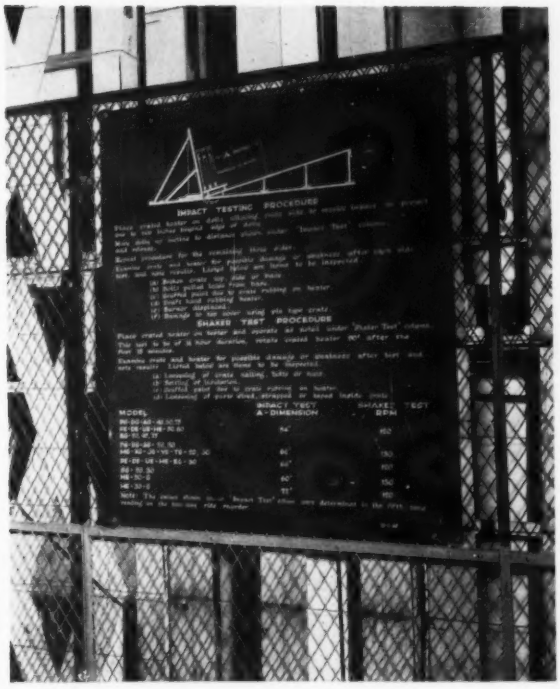
From the standpoint of shipping damage, our customer relationship is now very gratifying. Also "gratifying" is the fact that the indicated changes were made without an overall increase in packaging and shipping costs.

We perform "Safe Transit" tests in our plant, testing from 1 to 4 heaters from each production run. These runs are approximately 100 to 1000 units.

With each carload of heaters, we

to Page ST-16 →

Left: Tall packaged products may tend to "pitch" on vibrator. This photo shows method used by A. O. Smith for testing water heaters in unit loads of four, with a rope used for unitizing. From one to four heaters are tested (NST procedure) from each production run.



Above left: On the Conbur tester, a 30-gallon heater is being tested, with a 2-way ride recorder attached to the crate.

Above: This is the instruction board used by inspectors as a guide in performing the impact test.

Left: One half of a car-load of heaters loaded and unitized for shipment. This car contains a mixed load of heaters of different sizes. In every instance of mixed car-loading, a gate is placed between the units of different sizes to prevent damage.

WHAT THE RAILROADS SAY

letters from railroad representatives who attended the industry-wide Safe Transit conference

Missouri-Kansas-Texas Lines

To: NST Educational Division

I believe much good will result from the first annual conference of the National Safe Transit Committee, and I assure you that so far as this company is concerned, we are making every effort to insure careful handling of all cars containing commodities with a porcelain enamel finish.

As for information, our *freight loss and damage claims* on stoves, washing machines, and refrigerators *declined* from $69,029.43, in 1948 to $28,-328.86, in 1952. While we believe that more care in the handling of these cars contributed to a very material extent in this very noticeable reduction, we also believe that better manufacturing, packaging, and loading practices contributed to a very appreciable extent.

H. H. Precht,
Superintendent Stations & Claim Prevention

Norfolk and Western Railway Co.

To: NST Educational Division

As to the benefits obtained from attending the first "Industry-Wide Safe Transit Conference" . . . I secured valuable information and believe your committee is doing a wonderful job, and we wish to assure you that we will work with you and your committee in every way possible and recommend to shippers on our line manufacturing household appliances the benefit they might obtain through your committee.

The meeting was very instructive and helpful in many ways, and we believe that if you can get all shippers to cooperate, such as many are now doing, our claim accounts will be greatly reduced, thereby having satisfied consignees.

R. C. Nichols
Freight Claim Adjuster

The Atchison, Topeka & Santa Fe Railway System

To: NST Educational Division

In my opinion no railroad loss and damage prevention officer could have more profitably spent four hours than in attending your conference. The scientific approach to the packaging problem of household appliances is certainly a long step forward in preventing loss and damage.

It may interest you to know that since your meeting I have conducted two regional loss and damage prevention meetings, one in Topeka, Kansas, and the other in Fort Worth, Texas, in which I have commented favorably and at some length in connection with the fine work you people are doing. We are to hold three more regional meetings of the same character, two on the West Coast, and one at Albuquerque, N. M., within the next six weeks. In these latter three meetings I will also give recognition to the good work the National Safe Transit Committee is doing.

L. M. Olson
Assistant to Vice President

Northern Pacific Railway Co.

To: NST Educational Division

There appears to be no question but what the improved packing and crating recommended by your Committee would result in less damage to shipments, with an ultimate saving of time and money to all concerned.

The conference in Chicago was not only interesting but entertaining, and I, for one, will be most happy to speak a good word for your program whenever an opportunity presents itself.

F. J. Sollar
Freight Claim Agent

Southern Pacific Lines

To: NST Educational Division

I am indeed grateful to have been among those who attended the first "Industry-Wide Safe Transit Conference."

The conference was exceptionally well programmed, and there is no doubt that all who attended are now among the strongest promoters of the National Safe Transit Program. Every speaker was sincere and to the point, and the color-sound film was exceptionally interesting.

After seeing the enthusiasm with which so many manufacturers have supported the NST program, you may be assured we of Southern Pacific will encourage our shipping patrons, both large and small, to participate wholeheartedly in the National Safe Transit Program.

W. A. MacTavish
Texas and New Orleans Railroad Co.

The Texas and Pacific Railway Co.

To: NST Educational Division

I assure you it was a real pleasure to have had the opportunity of attending this meeting and I feel the activities which this Committee sponsor are well worth the time and effort of everyone in preventing Loss and Damage to shipments in transit.

It was certainly a most interesting and educational meeting, and I shall be glad to recommend to anyone to investigate the advantages of the Organization's purposes.

I know it will contribute materially to reducing waste through claim payments.

As an individual carrier representative, I shall be glad to cooperate at any time in furthering the cause of pretesting packages before forwarding.

A. B. Shaw
Supt. Stations & Frt. Claim Prevention

Chicago & Eastern Illinois R.R. Co.

To: NST Educational Division

I feel that the time invested in attending the all-day session of March 16 was very much worthwhile, as the program was both interesting and informative.

I don't believe it would be possible to over-emphasize the importance of adequate containers and sufficient inner packing. It was proven, as perhaps never before, during World War II, when good containers of all varieties were scarce, that unless shipments were properly packaged they frequently reached destination in damaged condition. Improperly packaged merchandise was one of the chief reasons for the Loss & Damage claim bill sky-rocketing to an all-time high. As soon as better containers became available, there was a noticeable decrease in claims on packaged merchandise.

As a freight claim agent, I am deeply gratified to note the success of your program as I am keenly aware of the tremendous importance of getting a shipment off to a good start. I want to assure you that whenever the opportunity arises, it will be my pleasure to make known to non-members, the advantages to be gained by compliance with the safe shipping practices sponsored by the National Safe Transit Committee.

J. P. Anderson
Freight Claim Agent
Loss & Damage Claims

The Baltimore & Ohio Railroad Co.

To: NST Educational Division

Pertaining to the "Industry-Wide Safe Transit Conference," the meeting was interesting as well as educational, and it was a pleasure to be present. I was very favorably impressed with the progress that has been made, also with the formulation of a program to develop procedures to insure the safety of freight in transit.

Activity tending to reduce loss and damage in the transportation of freight is certain to attract the interest and enlist the approval of railroad men. We feel the National Safe Transit Committee should be complimented on its fine contribution to a highly successful meeting, and that it deserves enthusiastic support in its very worthwhile undertaking.

W. L. Pfarr
Manager Station Operations

Editor's Note:

Case history information presented by manufacturer representatives before the Industry-Wide Safe Transit Conference was published in the April issue.

In this issue appears reports from representatives of two important national distributors who also appeared on the Conference program.

Chicago, Milwaukee, St. Paul and Pacific Railroad Co.

To: NST Educational Division

Regarding the National Safe Transit meeting. . . This meeting was also attended by our assistant to vice president in charge of operations, who is charged with Claim Prevention on our railroad, and three of his assistants, and I know that Mr. Ennis did get some good out of this meeting as he is working with a number of your shippers at the present time.

J. O. McIlyar
Freight Traffic Manager

Chicago South Shore & South Bend Railroad

To: NST Educational Division

I can truthfully say that I have benefitted by attending the Industry-Wide Safe Transit Conference, as it was both educational and very helpful to me, and I feel confident that this opinion was shared by most of those in attendance from the transportation field.

I think this program should be continued, and I will be glad to give my support.

Val M. Conley
Freight Traffic Department

An appliance distributor views Safe Transit

by W. H. Murray • *ASSISTANT SUPERVISOR OF PURCHASES AND STORES, GEORGIA POWER CO., ATLANTA, GEORGIA*

IF you have ever been in a distributor's warehouse in the middle of a sales campaign when a carload of damaged merchandise arrived, then you know well what the combined wrath of a sales manager, traffic manager, and warehouse superintendent can be.

If you were there as the representative of the manufacturer and were not already participating in the National Safe Transit Program, I think your first reaction would be to join up — to help do something to eliminate such useless waste. There can be nothing more distressing and costly for a distributor than to find his warehouse filled with damaged merchandise.

I think it can truthfully be said that no one — from the Manufacturer to the Consumer — is in a better position to see the value of the National Safe Transit Program than is a distributor such as we are.

Our 100 retail outlets

We not only buy appliances in carload lots, but we then distribute them to over 100 retail outlets of our own.

From these retail stores, we install the merchandise directly in the customers' homes. We have the opportunity to see its condition all along the line, and we also have all of the headaches that arise when merchandise is received damaged.

Not so many years ago, our warehouses over the state were so filled with damaged appliances, and the cost of repairs had become so great, I think some of us seriously doubted the wisdom of an electric utility company continuing in the business of selling electric appliances.

But now — thanks to the National Safe Transit Program — we are beginning to see the flood-tide of damage checked. What this program can do in the years ahead to reduce the terrible losses resulting from damage in transit is dependent entirely on the cooperation it receives from all industry and carriers involved.

The manufacturer's responsibilty

No longer can the manufacturer hold his place in the highly competitive market of today who holds to the old ideas that his responsibility ends when he builds a good product. It is also his responsibility to do everything possible to see that it is delivered to the buyer in good condition.

How many times have I heard a manufacturer say, when we complained about damaged merchandise, "File a claim on the carrier. Let them pay for it. We are relieved of our responsibility when we get our bill of lading signed."

That can no longer be the cry of the manufacturer who is to continue as a successful merchandiser.

The National Safe Transit Program has already helped our company in many ways.

The fact that we find some manufacturers who are seriously making every effort to deliver us a good product has made us more conscious of our responsibility to try and protect that product while in our possession.

We have begun to emphasize more strongly in our monthly warehouse meetings the importance of careful and proper handling of finished metal products.

The "little reminders" cause better handling

The labels on cartons, placed there by those manufacturers who have qualified under the National Safe Transit Program, which read, "Make Safe Handling Your Job," have created a lot of interest among our men. It is our belief that the sight of this label actually results in men all along the line giving a little better care to these particular crates. By using the label, the manufacturer is showing the carriers and his distributors that he is doing everything known to shipping science to see that the product is delivered to its final destination in good condition. We believe the carriers use more care when they know the manufacturer is doing his part.

Routing via "safe handling" transportation routes

Our records prove that we are spending much less time and money in recent months opening cartons which have been damaged to see if the contents were also damaged.

The National Safe Transit Program has made us give much closer attention to the routing of carload traffic. Formerly we routed like most Traffic Departments, with the foremost thought being to divide the business. This is no longer true. We have made extensive studies to find out where during transit, damage occurs. As we determine at what yard and over which route the damage occurs, we not only change our routing to eliminate these carriers, but we also develop information which enables us to

Ralph Bisbee — *general chairman of the National Safe Transit Committee — shown with citation presented at the first industry-wide National Safe Transit Conference held recently in Chicago. The closing paragraph of the citation states "To him and to his company, Westinghouse Electric Corp. is expressed the deep appreciation of all those who have shared in the benefits of the Program he has so faithfully guided."*

ADS OUT

work more closely with those carriers *who are trying to reduce damage.*

The same philosophy of routing holds true with the motor freight carriers.

It is only natural that we are going to give our business to the carriers who are working closely with the National Safe Transit Program.

Reports have come to me from our Traffic Department that most of the transportation companies operating in our territory are working more cooperatively than ever before to try to find out the cause of, and eliminate damage.

Any carrier who does not see the value of the National Safe Transit Program, and does not try to improve its facilities and educate its freight handlers can expect to lose business.

It goes without saying that the independent distributors are going to think a long time before they purchase merchandise and appliances from those manufacturers who are not sufficiently interested in their product to cooperate in this great program.

Leadership in business inherits the responsibility of making progress. The National Safe Transit Program is progress — let's all support it!

How Safe Transit helps close the manufacturer-distributor gap

400,000,000 lbs. of appliances shipped under the Safe Transit Label in 1952

by O. T. Sands • *IN CHARGE OF PACKAGING DIVISION, MERCHANDISE TESTING AND DEVELOPMENT LABORATORIES, SEARS, ROEBUCK AND CO., CHICAGO, ILLINOIS*

IN view of the fact that Sears, Roebuck and Co. is engaged in the distribution of almost every type of consumer goods except food and coffins, it is understandable why our interest in the National Safe Transit program dates back to its very inception.

As a matter of fact, I attended the first meeting in Chicago and I am personally gratified over the progress that has been made since that time.

We at Sears feel that any forward steps that can be taken towards moving goods safely and more efficiently help us fulfill our primary economic role. We are acutely aware of the disproportionate amount that distribution costs add to the total cost of consumer goods, and we are continually trying to do something about it. Far too often, the inventive genius and the production genius of a manufacturer is seriously nullified and penalized by the excessive costs involved in moving a product from the factory to the ultimate user. These cost factors have a very direct relationship to our nation's living standards.

While Sears is an enthusiastic endorser of the National Safe Transit program, it must be borne in mind that the major share of the responsibility for achieving progress in this direction rests with our sources of supply. Despite our enthusiasm and interest we can make relatively little progress unless our sources, too, climb on the bandwagon.

85% of major appliance suppliers use NST test procedures

In attempting to develop an accurate case history, I found it was almost impossible to establish figures on all our commodities which are shipped under the National Safe Transit program. However, it was possible to estimate that last year we shipped approximately 400 million pounds of appliances under the Safe Transit label. An even more significant figure is that showing that 85 % of our major appliance suppliers now test in accordance with the prescribed NST procedure.

To us, these figures are conclusive evidence that our suppliers are actively participating in the National Safe Transit program. Furthermore, about 20 per cent of the manufacturers certified under the NST program sell goods to Sears. So it is apparent that we — and our customers — stand to benefit from this program.

We make no bones of the fact that in many instances we have taken the liberty of recommending to manufacturing sources that they follow the standards laid down by this committee. I assure you that in so doing we have made friends — and never an enemy — because the accomplishments speak for themselves.

Probably we, as much as any firm represented here today, will watch with interest any efforts on the part of the NST Committee towards expanding its activities. As I indicated at the beginning of my remarks, there are few segments of the consumer goods industry that are not represented in our catalog or in our retail stores.

This committee's objectives are sound, for they are helping to close that unnecessarily wide gap between manufacturing costs and distribution costs.

CHICAGO MILL can help YOU deliver safely

Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★

FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

A shipping container for every shipping purpose

Crosley and many other leading appliance manufacturers depend upon Chicago Mill and Lumber Company to provide safe shipment for their finished products.

If you are having difficulty in solving a troublesome shipping problem, call in a Chicago Mill representative. Technical information, packing information, and testing services are available without obligation.

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

and eliminates Crating Department bottleneck for Hotpoint!

"BEFORE" HOTPOINT RANGE PRODUCTION LINE STALLED. Hotpoint workers found the hand stretcher method (shown above) too awkward in fastening corrugated board for shipping protection to new ranges as they poured off the production line. The line kept backing up.

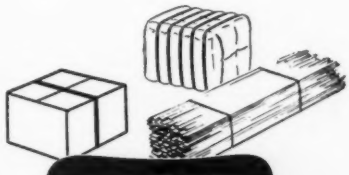
"NOW" ACME STEEL PNEUMATIC STRETCHER ELIMINATES BOTTLENECK, CUTS COSTS! The same workers now tension pre-cut Acme Steel strapping with an Acme Steel pneumatic stretcher. Shipping preparation costs have been held as much as 20 per cent below normal industry shipping costs. One operator says, "A man couldn't last all day before—too hard on the arms. Now with the Acme Steel system it's easy to keep ahead of production."

There it is. A clear cut case of how Acme Steel and know-how in steel strapping has helped a leading manufacturer solve a critical problem.

Chances are that many of your own production assembly or packing and loading problems can be cleared up with Acme Steel strapping, the best way to protect your product in shipment.

You will also learn that Acme Steel strapping, and the Acme Steel tools that work with it, will save materials and pay for themselves in a short time. Employees are happier because they know increased production means more, steadier jobs.

There are dozens of cases in the files to prove that nearly everything made to eat, wear, sit on or live in can be assembled and packed swiftly and will arrive safely with Acme Steel strapping. For specific examples, write to Acme Steel Products Division, Dept. F-53.



ACME STEEL

ACME STEEL COMPANY

2840 ARCHER AVENUE, CHICAGO 8, ILL.

SIPMHE NAMES ROBERTS V. P.

Alvin S. "Cy" Roberts, of Insurance Co. of North America, Philadelphia, has been appointed national vice president of the Society of Industrial Packaging and Materials Handling Engineers, succeeding I. E. Thomas, of Chicago, who resigned.

New national directors of SIPMHE are R. H. Freeman, of Miller Wrapping and Sealing Machine Co., Chicago, and W. L. Utley, of Towmotor Corp., Cleveland. The appointments were announced by Stanley Price, SIMPHE president.

NST CERTIFICATION FOR REZNOR, A-B STOVES, REVCO, MANITOWOC

The National Safe Transit Committee has announced the certifications of Manitowoc Equipment Works, Manitowoc, Wis.; Reznor Mfg. Co., Mercer, Pa.; A-B Stoves Division, Detroit-Michigan Stove Co., Battle Creek, Mich.; and Revco, Inc., Deerfield, Mich. A total of 126 manufacturers are now participating in the voluntary National Safe Transit Program, with more awaiting certification.

HINKLE HEADS ACME STEEL ENGINEERING AND RESEARCH

Acme Steel Co., Chicago, has announced the appointment of Walter F. Hinkle as director of engineering and research. In this capacity, he will direct all engineering activities of the company.

James N. Wognum was named chief engineer of the company's newly-created engineering research laboratory located at 7439 S. Ashland Ave., Chicago.

"These moves became necessary as a result of our continuous expansion program in engineering activities," stated C. M. MacChesney, chairman of the board.

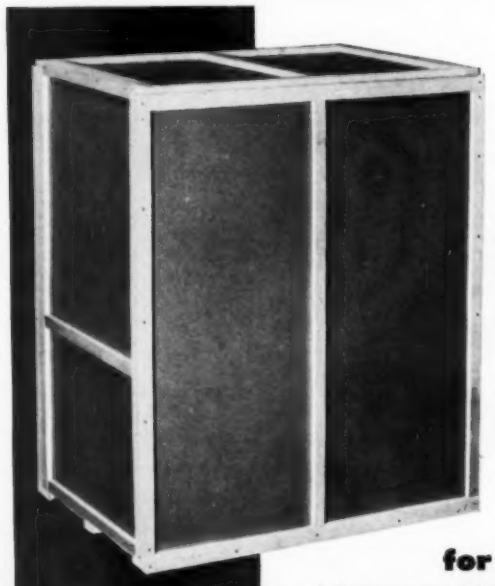
Net sales for Acme Steel Co. in 1952 were $58,323,702, down 28 per cent from 1951. In their joint letter to shareholders in the company's annual report, C. M. MacChesney, chairman, and J. C. Sharp, president, said "Last year, our Riverdale Plant was down eleven weeks or 22 per cent of the work year. Such a drastic interference with output must be considered when analyzing reduction of 28 per cent in sales volume compared to the previous year."

CLARK EQUIPMENT APPTS.

John A. Borman, formerly with Baker-Raulang Co., has returned to Clark Equipment Co.'s industrial truck division as assistant to Robert H. Davies, vice president, on engineering and production problems.

Russell Hastings, formerly with Lewis-Shepard Co., has joined Clark's staff as assistant to A. O. Williams in directing the activities of the engineering staff.

Earnings in 1952 were the highest in Clark Equipment's 50-year history, it was announced by George Spatta, president. Net earnings aggregated $5,504,000, after provision for federal income and excess profits taxes. The previous record for earnings was in 1948.



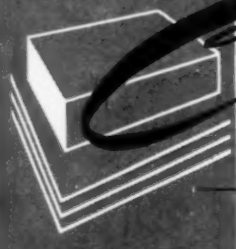
Cleated Fibre Shipping Containers

for Refrigerators, Ranges, Washers, Furnaces and other appliances

Major appliances are handled and shipped with greater safety when packaged in cleated fibre containers.

Cornell Cleated Fibre Containers are dirt-proof, light in weight, strong, and can be printed to dramatically display and advertise your product.

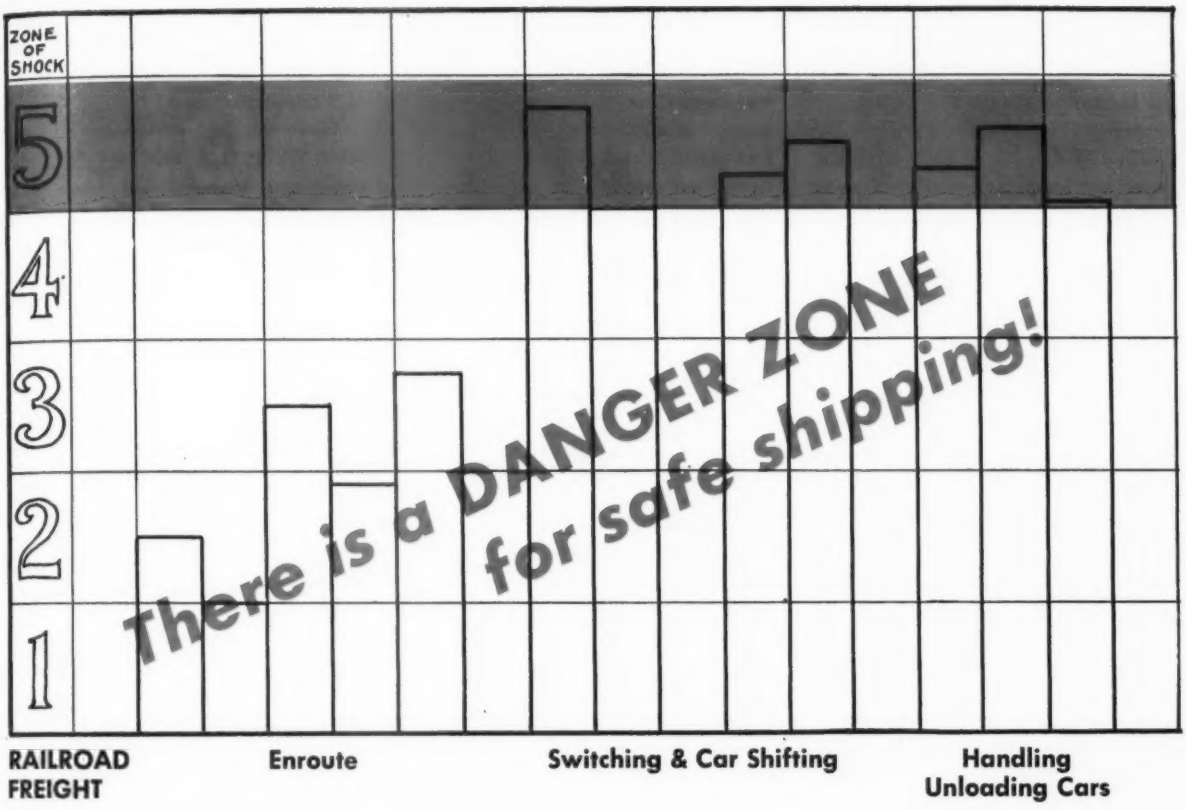
FOR boxes ...IT'S



CORNELL
PAPERBOARD PRODUCTS CO.
MILWAUKEE 1, WISCONSIN

SPECIALTY PAPERBOARDS • FOLDING CARTONS
CORRUGATED BOXES • SOLID FIBRE BOXES
CLEATED FIBRE CASES • FIBRE WALL BOARDS

ST-14



MORE and more manufacturers of Finished Products are learning about the DANGER ZONE for safe shipping. Through the National Safe Transit program for decreasing packaging and shipping losses they are learning:

1. **How to improve their product designs and manufacturing techniques for safe delivery.**
2. **How to package, handle and ship for safe delivery.**

The NST pre-shipment testing procedures lead to the answers to these questions and save them money too.

As the editorial spearhead for the NST program, the Safe Transit section of *finish* offers information on proper packaging and the why and how of good materials handling, packaging and shipping procedures.

Safe Transit offers a perfect editorial background for the advertising of quality products, materials and equipment for the packaging, shipping, and handling of home appliances and other finished metal products.

These companies are advertising in the SAFE TRANSIT SECTION of FINISH during 1953.

Acme Steel Company
Bigelow-Garvey Lumber Company
Car Blocking, Inc.
Chicago Mill & Lumber Company
Cornell Paperboard Products Co.
Gaylord Container Corporation
General Box Company
Impact Register Company
International Staple & Machine Co.
Kieckhefer Box & Lumber Company
Kimberly-Clark Corporation
L.A.B. Corporation
Minnesota Mining & Manufacturing Co.
Rathborne, Hair & Ridgway Box Co.
Sackner Products, Inc.
Sherman Paper Products Corp.
Signode Steel Strapping Company
Union Steel Products Company
Watkins Container Mfrs. Assn.
Weyerhaeuser Sales Company
Wirebound Box Mfrs. Association

Dana Chase PUBLICATIONS
360 NORTH MICHIGAN AVENUE • CHICAGO 1 • ILLINOIS
TELEPHONES CEntral 6-1229 — CEntral 6-1263

finish

NST helps A. O. Smith

→ *from Page ST-4*

include with the bill of lading a form for indicating nature and location of damage. The consignee indicates the location of damage in the note on the lower left hand corner of this sheet and he returns it to us. We have found that the use of a diagram is most helpful in determining the type of failure.

Equipment used for product testing

In addition to beefing up packages and getting the product to the consumer in an undamaged condition, we feel also that a very definite improvement in product performance has been obtained. We use "Safe Transit" test equipment to make special checks for insulation shakedown, failure of attachment of appendages and parts which would not be detected as shipping damage and to check function alignment of the major parts after shipping tests.

"Safe Transit," to the Permaglas Division of A. O. Smith, has become a design tool, a quality standard, and assurance to the dealer and customer that he will receive undamaged merchandise under normal shipping conditions.

MATERIALS HANDLING EXPOSITION IN PHILADELPHIA, MAY 18-22

The materials handling industry will assemble more than 3000 experts on every phase of handling to answer visitor's questions during the five-day run of the National Materials Handling Exposition at Convention Hall, Philadelphia, May 18-22, it was announced by Clapp & Poliak, Inc., exposition management.

An additional group of 42 experts, drawn from companies which use handling equipment, will lead three days of discussions at a conference conducted by the American Material Handling Society.

This assembly of expert talent is expected to provide about one expert for each eight visitors. Some 25,000 visitors from 40 countries are expected to attend the show which reportedly will be the largest industrial exposition to be held anywhere during 1953, and the largest ever held in Philadelphia.

Three hundred companies will exhibit. Every available foot of booth space was sold out last year. Machines valued at more than $10,000,000 will be shown in operation. Thousands of devices will be on public display for the first time.

The Conference, which will be held for three of the five days, includes the following topics:

"Handling in Process," "Warehousing and Shipping," "Packaging for Improved Handling," "Bulk Handling," and "Requirements for Organization, Study and Analysis."

Each seminar will be held on each of the three days, but different experts will serve as moderators.

GENERAL BOX UPS HOLZWART

J. A. Cragwall, president of General Box Co., Des Plaines, Ill., has announced the election of Emil Holzwart, production manager, as vice president in charge of production.

the grip of an **iron fist**

in a soft **velvet glove**

cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.

Sackner Products
900 Ottawa Avenue, N.W.
GRAND RAPIDS 2, MICHIGAN

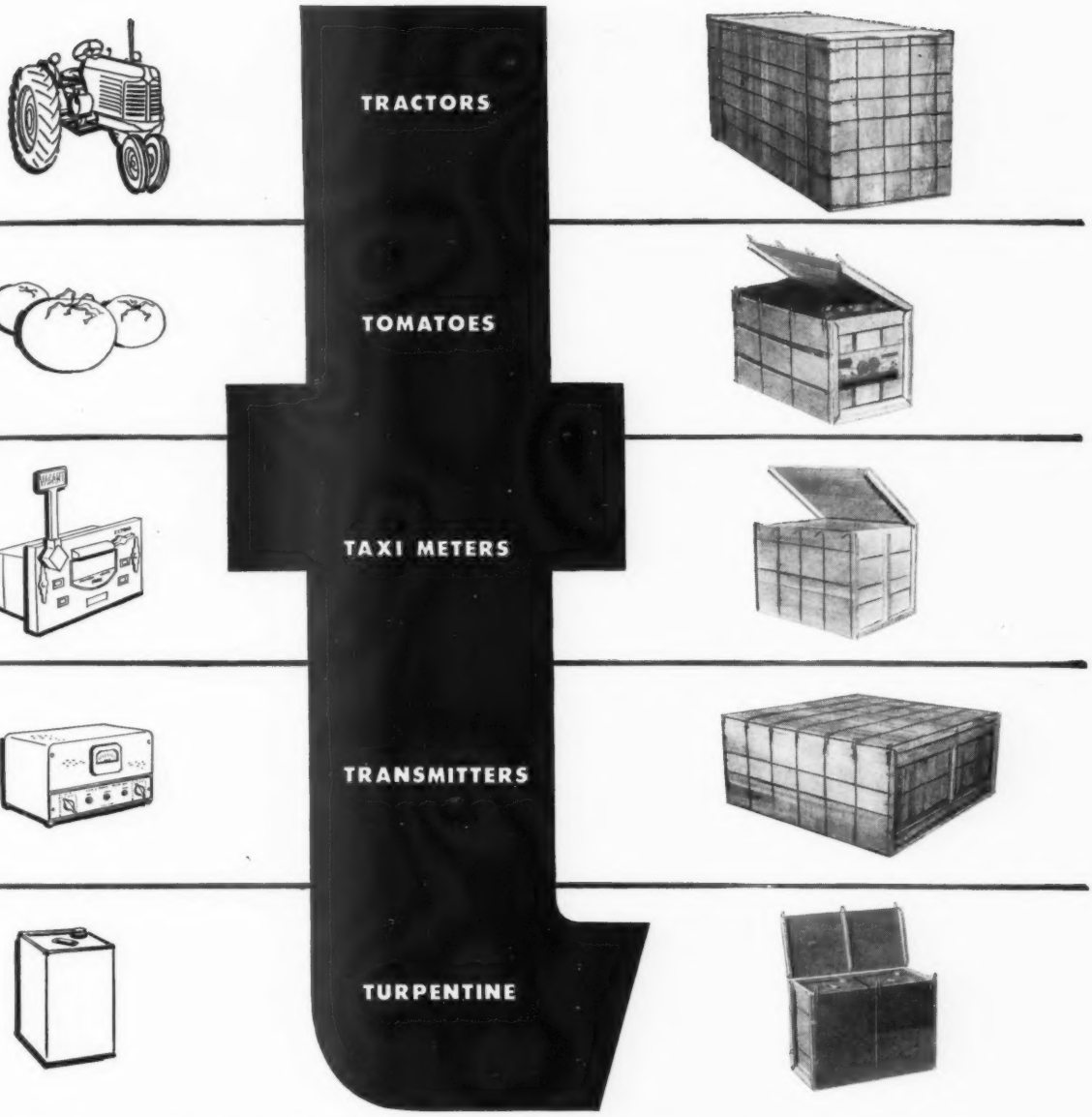
REPORT ON WAYNE U. MANAGEMENT CENTER

Summing up their first semester of operation at an informal dinner, students, faculty and founders of Wayne University's Materials Management Center, in Detroit, recently heard business and industrial leaders discuss problems, achievements, and future needs in materials management.

"The most significant development in the field in the past decade has been the "birth of an attitude," declared John G. Bucuss, president of Acme Steel Products Division, Chicago. It is this attitude—the acceptance of the basic principles of materials management—that has become so common and sharp with people working within its broad areas.

Material handling was singled out by L. Irving Woolson, president of Chrysler Corp.'s DeSoto Division, as one of the most important problems facing anyone responsible for producing a commodity.

The Center was established at Wayne in the spring of 1952 with Dr. Spencer A. Larsen as director. During its first semester of operation, the Center offered 10 courses in such fields as materials handling, traffic, materials control, packaging and preservation, warehousing, loading, industrial purchasing, quality control and inspection, and personnel management. The current semester has 325 persons enrolled in 13 courses.



WIREBOUND BOXES AND CRATES

handle them all—from A to Z

Whether your product is large, small, rugged, fragile, heavy or light; it will ship *better, safer* and *more* economically in a Wirebound Container.

Prove it to yourself!

Wirebound
BOXES & CRATES

wood and steel for strength and resiliency

MAIL THIS COUPON, TODAY!

WIREBOUND BOX MANUFACTURERS ASSN.
Room 1154, 327 South LaSalle Street Chicago 4, Illinois

Gentlemen:

☐ *I want the A.B.C.'s about Wirebounds. Send a free copy of your booklet, "What to Expect from Wirebound Boxes and Crates."*

☐ *Please have a Wirebound sales engineer give me the facts as they apply to our product.*

Name _____ Position _____

Firm _____

Street and Number _____

City _____ Zone _____ State _____

Our Product is _____ It Weighs _____

SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE

DuPont Circle Building, 1346 Conn. Ave., N.W., Washington 6, D. C.

Safe Transit Certifications Total 126 - In the past few months ten new companies have been certified under the National Safe Transit Program. Their names alone make an impressive list, and the Committee is proud to add to its roll call in order of certification:

Easy Washing Machine Corporation, Syracuse, New York
Peerless Manufacturing Corporation, Louisville, Kentucky
Bryant Heater Division, Affiliated Gas Equipment, Inc., Tyler, Texas
Rheem Manufacturing Company, Chicago, Illinois
Fedders-Quigan Corp., Maspeth, Long Island
Universal Major Electric Appliances, Inc., Baltimore, Maryland
The Manitowoc Equipment Works, Manitowoc, Wisconsin
Reznor Manufacturing Company, Mercer, Penna.
A-B Stoves, Division Detroit-Michigan Stove Co., Battle Creek, Mich.
Revco, Inc., Deerfield, Michigan

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NST Color Film Popular with Manufacturers - The Washington headquarters office of the Committee has been busy servicing requests for its new color-sound film on the National Safe Transit Program. Requests are always handled in order of receipt, and the Committee regrets those times when there are just not enough copies of the film to go around. During the past two months more than 40 showings have been made before manufacturing and container groups, with audiences totaling more than 2,000 people.

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Carriers Feature NST Film in Their Programs - Carrier groups have been equally enthusiastic in their presentations of the NST film. Railway Express Agency featured it in their recent training program held in Jacksonville, Florida. American Trucking Assns., Inc., Washington, D. C., and the American Trucking Assn. of Southern California have both had showings before large groups that included owners, managers, and claim agents of various motor trucking companies. Pennsylvania-Reading Seashore Lines has scheduled the film for presentation at their Perfect Shipping Rally in Camden, New Jersey, on April 23. Erie Railroad Co., Cleveland, Ohio, has purchased a copy, and Mr. E. J. Stubbs, Assistant Vice Pres. reports that the first showing was on March 30th at "a meeting of 400-500 men, industrial and railroad, most of whom are the people who do the handling."

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Safe Transit Story Presented to RCA - At the request of the Radio Corporation of America, John C. Oliver, Secretary of the National Safe Transit Committee, gave a talk on the Safe Transit Program for RCA's Packaging Committee meeting in Camden, New Jersey, on March 31. In attendance was the General Traffic Manager of the entire Radio Corporation of America, and representatives from traffic, packaging, materials and handling, of each of the Corporation's divisions and subsidiaries. Following the showing of the NST film was a 30-minute question and answer session. The meeting was representative of the interest in the pre-shipment testing program for radio and television products as well as major appliances.

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Use of Car Placards as Adjunct to Labels Grows - More manufacturers are recognizing the contribution that the Safe Transit Car Placard makes in assuring safe delivery. These 8½ x 11 car placards, that are applied to the outside of car loads of Safe Transit tested shipments, were used in quantities totaling more than 75,000 during the past year.

DEFENSE AGENCY MEN STUDY NAVAL PACKAGING OPERATIONS

Sixteen members of the Defense Supply Management Agency Packaging Industry Advisory Committee recently spent a day studying operations at the U. S. Naval Supply Base, Bayonne, N. J. One of their tasks was to see how the military compares with civilian industry in packaging and preservation.

Rear Admiral Charles L. Austin, commanding officer of the Naval Supply Corps School and the Supply Corps' research and development facility, welcomed the visitors, who were then shown work in progress at the facility in supply engineering, logistics, and commissary research.

The visitors saw testing machines that crush, tumble, and abuse packages of various sorts in an effort to develop better ways of packaging. Huge crushing machines, tumbling drums, and moving platforms were demonstrated by Navy technicians.

Capt. Hugh C. Haynsworth, Jr., Depot commanding officer, welcomed the men as the tour was continued through storage warehouse areas, the torpedo net preservation unit, and the packaging and preservation unit.

Members of the Committee present included: R. G. Anderson, Sperry Corp.; J. W. Kraus, Thompson Products, Inc.; N. A. Fowler, General Box Co.; H. H. Loeffler, Exeter Paper Co., Inc.; R. O'Reilly, General Motors Corp.; T. K. Mount, Insurance Co. of No. America; H. A. Rohdin, Packaging Industry, Inc.; E. P. Troeger, Douglas Aircraft Co.; H. J. Carr, Owens-Illinois Glass Co.; E. Griepenkurl, Davidson Chemical Co.; R. A. Norris, Government liaison representative; E. F. DeAtley, G-4, U. S. Army; Les C. Heller, Office of Naval Material; Col. R. L. Mason, Air Material Command, Wright Field; K. W. Kruger, Forest Products Laboratory; P. S. Forsythe, Research and Development Board.

NATL. CONTAINER WINS AWARDS

National Container Corp., of New York, was recipient of seven awards in the 1953 Fiber Box Competition, it was announced at the spring meeting of the Fiber Box Association, held in Chicago, April 14.

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METAL TRADES EXECUTIVES TO MEET IN PHILADELPHIA

Nearly 800 management executives from industrial companies in the Middle Atlantic States will assemble at the Bellevue-Stratford, Philadelphia May 6 and 7 for the Mid-Atlantic Assembly of the National Metal Trades Association.

The event is the first annual event of Region B of the Metal Trades Association which includes New York, New Jersey, Pennsylvania, Maryland and Delaware.

ROBERTSHAW SALES UP

John A. Robertshaw, president of Robertshaw-Fulton Controls Co., said that his company is expecting this year's sales to be considerably above last year's $50 million.

STALEY JOINS REYNOLDS

The appointment of John Staley as project director in the company's product and market sales development department has been announced by Reynolds Metals Co., Louisville.

AMANA PLANNING DEPT. APPTS.

It is reported that David W. Hunter has been named planning department superintendent at Amana Refrigeration, Inc., Amana, Iowa, and will be in charge of scheduling material flow in the factory. The report also indicated that William L. Van Haecke, named planning department supervisor, will be in charge of planning and scheduling production.

EUREKA WILLIAMS NAMES MOTZ

Donald F. Motz is reported to have been named product manager of the Williams Division of Eureka Williams Corp., Bloomington, Ill.